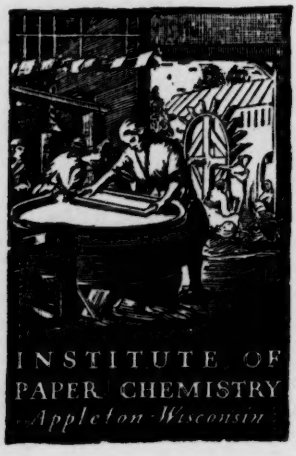
Pages 523-598

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

MARCH · 1954
Volume 24 Number 7

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Books and Pamphlets Added to the Library During February

ALGAE

BURLEW, JOHN S., ed. Algal culture from laboratory to pilot plant. Carnegie Institution of Washington publication 600. Washington, The Institution, 1953. 357 p.

BAMBOO

SINEATH, H. H., DAUGHERTY, P. M., HUTTON, R. N. [and] WASTLER, T. A. Industrial raw materials of plant origin. V. A survey of the bamboos. Engineering Experiment Station of the Georgia Institute of Technology. Bulletin no. 18. Atlanta, Ga., The Station, 1953. 230 p.

BIOLOGICAL CHEMISTRY

BONNER, JAMES. Plant biochemistry. 1st ed. New York, Academic Press, 1950. 537 p.

FRUTON, JOSEPH S., and SIMMONDS, SOFIA. General biochemistry. New York, Wiley [c1953] 940 p.

BIOLOGY

AGAR, W. E. A contribution to the theory of the living organism. [2d ed. rev. Victoria] Melbourne Univ. Press [London and New York, Cambridge Univ. Press, 1951] 235 p.

BOTANY—MICROTECHNIQUES

JOHANSEN, DONALD ALEXANDER. Plant microtechnique. 1st ed. New York, McGraw-Hill Book Co., 1940. 523 p.

CARBOHYDRATES

ADVANCES in carbohydrate chemistry. Ed. by Claude S. Hudson [and] Melville L. Wolfrom. Associate editors for the British Isles, Stanley Peat, Maurice Stacey [and] E. L. Hirst. New York, Academic Press, 1953. v. 8. 408 p.

CHEMISTRY, TECHNICAL—DICTIONARIES AND ENCYCLOPEDIAS

KIRK, RAYMOND E., and OTHMER, DONALD F., ed. Encyclopedia of chemical technology. Assistant editors, Janet D. Scott and Anthony Standen. New York, Interscience Encyclopedia [c1947-53] v. 1-11. A to Rutin.

COMMERCIAL PRODUCTS—SPECIFICATIONS

MACNIECE, E. H. Industrial specifications. New York, Wiley [c1953] 158 p.

CRIMINAL INVESTIGATION

KIRK, PAUL L. Crime investigation; physical evidence and the police laboratory. New York, Interscience Publishers [c1953] 784 p.

DISSERTATIONS, ACADEMIC

DOCTORAL DISSERTATIONS accepted by American universities 1952-1953 (number 20). Compiled for the Association of Research Libraries, ed. by Arnold H. Trotier and Marian Harman. New York, Wilson, 1953. 305 p.

DRYING—PAPER

MONTGOMERY, A. E. Drying of paper in the paper making process. Boston, William L. Barrell Co., 1954. 43 p.

FISHES

DAVIS, H. S. Culture and diseases of game fishes. Berkeley and Los Angeles, Univ. of California Press, 1953. 332 p.

FOREST PRODUCTS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Yearbook of forest products statistics, 1953. Rome, The Organization, 1953. 153 p.

FORESTS AND FORESTRY

HUTCHISON, O. KEITH, and WINTERS, ROBERT K. Kentucky's forest resources and industries. U. S. Forest Service. Forest resource report no. 7. Washington, U. S. Govt. Print. Off., 1953. 56 p.

INFORMATION SERVICES

ALEXANDER, JEWEL, ed. Sources of information and unusual services. 3d ed. 1954-55. New York, Informational Directory Company [c1954] 64 p.

MATTER—PROPERTIES

HOUWINK, R. Elasticity, plasticity and structure of matter, with a chapter on the plasticity of crystals by W. G. Burgers. 2d ed. Washington, Harren Press, 1953. 368 p.

PAPER—COATED

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY [*Coating Committee*] Preparation of paper coating colors. Authors: E. A. Barclay, J. E. Donahue, D. A. Hughes, R. H. Rogers, Jr., J. R. Simpson, and R. N. Thompson. TAPPI monograph series no. 11. New York, The Association, 1954. 62 p.

PHOTOELASTICITY

FROCHT, MAX MARK. Photoelasticity. New York, Wiley [c1941-48] 2 v. 411 and 505 p.

PHYSICS

JAFFE, ERWIN. The science of physics in lithography. Illustrations by Edith Strauss and the author. New York, Lithographic Technical Foundation [c1953] 139 p.

POLYMERS AND POLYMERIZATION

FRITH, ELIZABETH M., and TUCKETT, R. F. Linear polymers. New York, Longmans, Green [1951] 355 p.

POPLARS

ENTE NAZIONALE PER LA CELLULOSA E PER LA CARTA. La seconda sessione della Commission Internationale du Peuplier dal 20 al 28 aprile 1948, Italia. Roma, Ente Nazionale, 1953. 247 p.

PRINTING, PRACTICAL

POLK, RALPH W. The practice of printing. Rev. and enl. Peoria, Ill., Chas. A. Bennett Co. [1952] 324 p.

SPECTRUM ANALYSIS

GORDY, WALTER, SMITH, WILLIAM V. [and] TRAMBARULO, RALPH F. Microwave spectroscopy. New York, Wiley, 1953. 446 p.

SCRIBNER, BOURDON F., and MEGGERS, WILLIAM F. Index to the literature on spectrochemical analysis. Part III, 1946-1950. Publication sponsored by Committee E-2 on Emission Spectroscopy of the American Society for Testing Materials. ASTM special technical publication No. 41-C. Philadelphia, The Society [c1954] 226 p.

STATIC ELECTRICITY

THE INSTITUTE OF PHYSICS, *London*. Static electrification; a symposium held by The Institute of Physics in London on 25, 26 and 27 March, 1953. British journal of applied physics supplement no. 2. London, The Institute, 1953. 104 p.

STATISTICS

U. S. BUREAU OF THE CENSUS. Statistical abstract of the United States, 1953. 74th ed. Prepared under the direction of Morris B. Ullman. Washington, U. S. Govt. Print. Off., 1953. 1041 p.

TEXTILE INDUSTRY AND FABRICS

REVIEW of textile progress. Manchester, The Textile Institute,

and Bradford, The Society of Dyers and Colourists [1953] v. 4, 1952. 560 p.

VIBRATION

STOKER, J. J. Nonlinear vibrations in mechanical and electrical systems. New York, Interscience Publishers, 1950. 273 p.

ZEIN

RATHMANN, DOROTHY M. Zein, an annotated bibliography 1891-1953. Mellon Institute bibliographic series. Bulletin no. 7. Pittsburgh [Mellon Institute] 1954. 118 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

LYON, JAMES R. Adhesives for paper, film and foil lamination. Paper Mill News 77, no. 9: 14-17 (Feb. 27, 1954).

The author discusses the adhesives used in laminating paper to paper, paper to aluminum foil, and paper to transparent film; resin starch ethers, polyvinyl alcohol starch, soya protein adhesives, adhesives for foil and transparent film laminations, and thermoplastic adhesives are covered. The addition of plasticizers, solid-fiber lamination, and a check list for use in making test runs of aluminum to paper adhesives are included. 4 references. R.A.S.

PALENIK, KAROL, and MYSLINSKA, ZOFIA. Water resistant starch adhesives used in paper converting. Przeglad Papierniczy 9, no. 6: 168-73 (June, 1953). [In Polish; Russian and English summaries]

For abstract *cf.* C.A. 47, no. 19: 10225-6 (Oct. 10, 1953). 1 table, 4 diagrams, and 10 references. E.S.

AIR CONDITIONING

JUNKER, WILLIAM H. Air conditioning at Palm Bros. Decal. Co. Modern Lithography 22, no. 2: 54, 56, 59-60 (February, 1954).

The new air-conditioning system at Palm Brothers Decalcomania Co., Cincinnati is described. In the manufacture of decals, production problems caused by humidity conditions are multiplied by the very nature of the sensitive product. The new system combines ventilation, heating, cooling, filtering, dehumidification, and humidification as needed by seasonal requirements. 1 table, 1 flowsheet, and 3 illustrations. E.S.

ALKALINE PROCESSES

NEPENIN, YU. N., and ORLOVA, T. N. Accelerating kraft cooking. Bumazh. Prom. 28, no. 4: 5-10 (April, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 14: 7214 (July 25, 1953). 2 tables, 5 diagrams, and 8 references. E.S.

NEPENIN, YU. N., and ORLOVA, T. N. Kraft mill chemical losses. Bumazh. Prom. 28, no. 2: 5-9 (February, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 10: 5115 (May 25, 1953). 7 tables and 9 references. E.S.

PREY, V., WALDMANN, E., and KRZANDALSKY, W. The study of the alkaline disintegration of beechwood. Holzforschung 7, no. 4: 117-22 (1953). [In German; English summary] *cf.* B.I.P.C. 24: 267-8.

According to Brauns and Grimes (*cf.* B.I.P.C. 9: 332), the alkali consumption for a normal one-stage soda cook amounts to approximately 16%; 75% of this amount (i.e., 12%) is consumed by the hemicelluloses. The results of the present investigations with beechwood and their hemicelluloses showed that only a quarter of the 12% of alkali is required for dissolving the hemicelluloses, whereas the remaining three quarters are used for neutralizing the acids formed during their alkaline digestion. Hence, in the cooking of beechwood, more than half of the alkali is consumed in the formation of worthless secondary products. The degradation of hemicelluloses can only be prevented by the use of low temperatures (not over 100°C.) and pH values below 12. However, the principal object of alkaline pulping, i.e., the dissolution of lignin, requires pH values of at least 12 and temperatures above 140°; the suppression of hemicellulose degradation can therefore not be accomplished in a one-stage cook, but only by a process involving a mild prehydrolysis followed by a cook at elevated temperature. The present investigations have also shown that, with increasing removal of the hemicelluloses below 100°, the yield of alkali lignin of beechwood may be reduced to half the amount obtained under standard cooking conditions. The authors conclude therefore that at least a portion of the technical alkali lignin obtained during the digestion of beechwood is formed from hemicelluloses during the cooking process. 2 tables, 11 figures, and 13 references. E.S.

SIMKIN, G. E. Cooking curves for rapid kraft pulping. Bumazh. Prom. 28, no. 7: 24-8 (July, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 22: 12810 (Nov. 25, 1953). 3 tables, 6 diagrams, and 6 footnotes. E.S.

ALPHA PULP

AKIM, L. E., and KIL'KKI, V. E. The influence of molecular heterogeneity on the reactivity of viscose sulfite pulp. Bumazh. Prom. 28, no. 10: 5-9 (October, 1953). [In Russian]

For abstract *cf.* C.A. 48, no. 3: 1673 (Feb. 10, 1954). 7 tables and 3 footnotes. E.S.

ALUMINUM

FULTZ, J. M. Some recent developments in aluminum foil packaging of foods. Food Technol. 8, no. 1: 19-21 (January, 1954).

In most packaging applications, the desirable properties of aluminum foil (I) are best utilized by combining it with another material, such as paper or a plastic film. Nearly all types of papers can be laminated to (I); the author discusses applications of combinations of (I) with parchment paper, wet-strength tissues, and very porous tissues. In the plastics field, (I)-polyethylene, (I)-Pliofilm, and (I)-saran combinations and their resulting properties are considered. Mention is also made of tray-type containers uncombined with other web materials, particularly for prepared or cooked foods. Each product must be checked to determine whether or not it will attack the uncoated aluminum and, if it does, a suitable coating must be selected which will offer protection to the foil. 2 illustrations. E.S.

ASSOCIATIONS

HAFNER, ED. Report of the annual meeting of the Verein der Zellstoff- und Papier-Chemiker und -Ingenieure in Bad Kissingen (Zellcheming) from July 14 to 17, 1953. Textil-Rundschau 8, no.

11: 625-9; no. 12: 667-71 (November, December, 1953). [In German] *cf.* B.I.P.C. 23: 84.

A report of the annual meeting of 1953 is presented, including abstracts of the papers. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Condensations of annual meeting papers. Tappi 37, no. 2: 32A, 34A, 36A, 38A, 40A, 42A, 44A, 46A, 48A (February, 1954); Paper Mill News 77, no. 8: 90, 132, 134, 136, 138, 141-2, 144, 146, 148, 150, 152-4, 156, 158, 160, 164 (Feb. 20, 1954); Southern Pulp Paper Mfr. 17, no. 3: 76, 78, 80, 82-4 (March, 1954); *cf.* B.I.P.C. 23: 539.

Condensations of a number of papers presented at the 39th annual meeting of TAPPI on February 15-18, 1954 in New York are given. R.A.S.

THAPAR, BRIJ MOHAN. The paper industry in India. Indian Print & Paper 19, no. 2: 11-12 (October, 1953); *cf.* B.I.P.C. 23: 5.

In his presidential address at the 11th annual general meeting of the Indian Paper Mills Association in Calcutta, the author reviews progress in production made during 1952, imports, raw materials and forest policy, capital, labor, and transport difficulties. E.S.

BAGASSE

ANON. Newsprint from sugar bagasse used on Delhi daily. Indian Print & Paper 19, no. 2: 27 (October, 1953).

A short trial run on bagasse paper by *The Statesman* in Delhi gave the following results: The texture was somewhat rough for halftones; the intense white imparted by titanium dioxide will show up an ink deposit on long runs under certain conditions. The paper took the ink well; however, when flooded to test its absorbency, spreading rather than absorption occurred. The softness of the paper will result in a creasing tendency which might be overcome by a slightly stiffer paper. Opacity is poor, but might be corrected with a more suitable filler. The paper was not produced for newsprint; it will therefore be interesting to try out a bagasse paper specifically made for this purpose. E.S.

BHARGAVA, M. P. Bagasse for newsprint. Indian Pulp and Paper 8, no. 5: 249-51 (November, 1953); *cf.* abstract above.

The author points out that the publicity recently given in India to the manufacture of newsprint containing 70-80% bagasse is not backed by necessary and adequate economic and technical data and must, therefore, be considered premature. Appropriate research to establish the feasibility and limitations of bagasse pulp in newsprint is urgently needed before definite conclusions can be drawn. E.S.

BORDENAVE, R. Bagasse for papermaking. Indian Pulp and Paper 8, no. 6: 293-7 (December, 1953).

With frequent reference to the article by Atchison (*cf.* B.I.P.C. 23: 159), the use of bagasse as a possible raw material for papermaking is discussed in the practical interest of sugar industrialists. Bagasse is already effectively used for different types of paper and corrugating board in several parts of the world, although "it seems to be at the bottom of the list so far as economic feasibility for newsprint is concerned." Most of the mills have adopted the Celdecor-Pomilio (soda-chlorine) process. The possibilities for liberating

bagasse now used as a fuel are outlined, with particular emphasis on the economics involved. In the extreme case where the bagasse has to be entirely substituted by coal or oil and then transported some distance to a pulp mill, it is far from being a material to be had for the asking by the pulp mill. It is, however, true that it is still one of the least expensive raw materials available, particularly if surplus bagasse can be used. Production costs will vary with locality. Five tons of wet bagasse or three tons of dry bagasse will give one ton of airdry bleached pulp. The papermaking qualities of the bagasse fiber are briefly outlined (short fibers which need little cutting and give a close and firm sheet of good formation and look-through; strength properties are satisfactory for printing and writing; rigidity is excellent, but opacity is poor). E.S.

BARK

ANON. Making the bark pay. Chem. Week 74, no. 8: 96 (Feb. 20, 1954).

Reference is made to bark extracts produced at the Scotia, Calif. plant of Pacific Lumber Co. under the trade names Palcotan and Palconate; they are used as dispersants, binders, deflocculants, antioxidants and sequestering agents in boiler feed water, etc. Palconate is principally employed as a replacement for quebracho in drilling muds. A new bark board (Palco board) has also been developed; its principal application is in the construction of cold-storage houses. E.S.

ROGER, NORMAN F., KOEPP, WALTER H., and GRIFFIN, EDWARD L., JR. Hemlock slabs as a source of pulp and tannin. J. Am. Leather Chemists Assoc. 49, no. 2: 75-91 (February, 1954).

A large volume of hemlock slabs and edgings is wasted each year at sawmills in the Upper Peninsula of Michigan. The segregation and recovery of hemlock bark from these slabs for use as a tanning-material source has been studied. A test lot of year-old, air-dried hemlock slabs was chipped in a power-fed, disk-type chipper; the chips were classified by size by screening into five fractions. The coarsest fraction, which contained largely knots, was discarded. The three middle fractions were each segregated on an air-flotation gravity separator to produce a wood product, a bark product, and a middling fraction. The middling fractions were then refloated to give additional wood and bark products. The bark fractions blended together with the finest screened fraction which was not air floated gave a combined bark product which contained over 10% tannin and included about 92% of the total bark in the slabs. The combined wood product contained 99% wood and included 77% of the total wood in the slabs. The process could be adjusted to produce wood chips with somewhat less bark but with a lower yield or, if more bark could be tolerated in the wood chips, a higher yield could be obtained. The authors suggest the collection of the slabs at a central point in the Upper Peninsula and their chipping and segregation into bark for use in an extract plant at the same location (50 cords/day capacity) and the sale of bark-free wood chips to pulp mills either in the Upper Peninsula or nearby Wisconsin. 5 tables, 5 figures, and 9 references. E.S.

BARKERS AND BARKING

GODFREY, G. E., and BELL, G. E. Barking research at the Forest Products Laboratory, Ottawa, summer of 1952. Pulp Paper Mag. Can. 55, no. 1: 102-4 (January, 1954).

Research work carried on at this time was concentrated on improving the efficiency of the buzz barker. Tests were made comparing the operation of the

conventional straight-cut head with that of the curv-cut head. The straight-cut was found superior, but modifications in the curv-cut are planned for future investigation. 11 illustrations. R.A.S.

BEATING

RYUKHIN, N. V. Investigation of pulp fibers with the electron microscope. Bumazh. Prom. 28, no. 1: 20-2 (January, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 10:5116 (May 25, 1953). 14 photomicrographs and 5 references. E.S.

VOLOKITINA, N. A., VOYUTSKIĬ, S. S., and ZAĬONCHKOVSKIĬ, A. D. The influence of beating degree on the properties of wet paper or paperboard. Bumazh. Prom. 28, no. 3: 6-9 (March, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 14: 7212 (July 25, 1953). 4 tables and 3 diagrams. E.S.

BLACK LIQUOR—OXIDATION

LASZKIEWICZ, LUDWIK. Black liquor oxidation. Przeglad Papierniczy 9, no. 5: 137-40 (May, 1953). [In Polish; Russian and English summaries]

For abstracts *cf.* C.A. 47, no. 19: 10226 (Oct. 10, 1953). 3 tables, 4 figures, and 3 references. E.S.

BLEACHING

HOLST, GUSTAF. The chemistry of bleaching and oxidizing agents. Chem. Revs. 54, no. 1: 169-94 (February, 1954).

In this review, the ionization energy, oxidation-reduction potentials, and the light-absorption characteristics of various chromophoric groups, and the effects of ultraviolet light upon certain of these groups are discussed. Energy changes in aqueous solutions of hypochlorous acid and chlorine dioxide are compared, and the electrochemical potential in relation to the complete energy change of a number of oxidants is illustrated graphically. The decomposition of hydrogen peroxide and the effect of catalysts under alkaline and acid conditions, as well as the suppression of the catalytic effect by substances such as sodium silicate or sodium stannate are described. Data showing the influence of alkalinity on the rate of fall in oxygen content of these peroxide solutions, using the logarithm of "half time" as a relative measure of decomposition, are presented. The reactions of halogen-oxygen compounds in aqueous solutions are discussed, with particular emphasis on chlorine dioxide and the effect of pH on liberation of chlorine dioxide from solution. Structural changes produced by oxidation with hypochlorite in several dye compounds and the destructive oxidation of cellulose at neutral pH are pointed out. The effective bleaching of jute using hypochlorite followed by alkaline peroxide to avoid yellowing is mentioned, as well as the attack on the fibers where hypochlorite is carried over into the peroxide bleach. 3 tables, 10 figures, and 58 references. W.B.W.

BLEACHING—GROUNDWOOD

ANDREEV, K. P. Bleaching groundwood with sodium dithionite. Bumazh. Prom. 28, no. 7: 29-30 (July, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 22: 12809 (Nov. 25, 1953). E.S.

BOARD

MALCOLMSON, J. D. Paperboard and the graphic arts. Print 8, no. 4: 17-22 (December, 1953).

The tremendous growth in the production of paperboard is reviewed; it is predicted that the present output will double by 1975. New uses for paperboard and the application of printing, developed to the degree of four-color art reproductions and the use of sheet-fed gravure presses, are discussed. 8 illustrations. R.A.S.

VORREITER, LEOPOLD. The long-fiber pulping process and long-fibered board. Das Papier 8, no. 1/2: 7-13 (January, 1954). [In German; English and French summaries]

The Lignogen process (patents applied for), a new method for obtaining a long-fibered pulp from barked or unbarked healthy coniferous wood waste, is described. The raw material is not chipped, but cut into blocks 40-100 mm. in length and cooked with an essentially alkaline liquor (exact composition not disclosed) for 1.5-2.5 hours with or without pressure. This is followed by a diffusion treatment for 24-36 hours in the same hot liquor but without additional heat. The length of this diffusion period will depend on kind of wood, average size of blocks, and cooking pressure employed. Following this treatment, the blocks are subjected to a mild defibration in a water-hammer pulper, giving a pulp in 78-83% yield (referred to the ovendry original wood) which consists of 55-68% fiber chains and bundles of 10-60 mm. in length, 28-36% individual fibers (maximum length 6 mm.), and 4-9% mucilage. Standard stuff pumps cannot be employed for handling the pulp in suspension; screw presses and bucket, scraper, or belt conveyors answer the purpose much better. Board formation takes place upon a special machine of simple design; the pulp drains and felts rapidly. Depending upon use requirements, either the long-fibered fractions alone or all fractions are used. The pulp which occupies a somewhat intermediate position between fine wood excelsior and groundwood or kraft pulp, is best used for felts or boards for packing purposes exposed to high static or dynamic stresses, where its light weight, softness, and high folding endurance are of special advantage. The boards can be prepared in thicknesses of from 2 to 100 mm. and densities from 115 to 1200 kg./cu. m. 1 table, 13 figures, and 13 references. E.S.

BOARD—CONVERSION

ANON. New Fitzhugh corrugated plant. Fibre Containers 39, no. 1: 60, 62-8 (January, 1954).

The layout and installations of the new corrugated box plant at Lakeview, West Hempstead, Long Island, N.Y. of William W. Fitzhugh, Inc., a one-story plant on a 12-acre site, are described. Most of the machinery was transferred from an old plant located in cramped quarters in Brooklyn. The principal features of the new plant include a 78-inch Swift corrugator, printer-slotters, tapers, stitchers, slitter-scorers, a pneumatic trim-removal system, etc. Materials handling is almost entirely by power trucks. 1 floor plan and 15 illustrations. E.S.

BOARD—DEFECTS

R. G. Boards with invisible defects. Allgem. Papier-Rundschau no. 22: 936-8 (Nov. 20, 1953). [In German]

The author discusses different examples of apparently faultless board shipments which, however, contained certain hidden defects which became

noticeable only during the following conversion. Textile boards which lost their luster after two or three applications (luster imparted by incorrect means); boards for drawing which burst during conversion (incorrect furnish); leatherboard for shoe soles which did not keep their shape (incorrect excessive sizing); laminated strawboards which exhibited unsightly spots on storage (residual alkali in pulp); beer coasters of insufficient absorptivity (incorrect stock preparation); laminated ivory board which would not lie flat (incorrect furnish and stock preparation and incorrect insufficient seasoning); jacquard board which exhibited stretching tendencies (incorrect manufacture, i.e., too rapid dewatering); binder's board with excessive color variations (waste paper not carefully sorted); and excessively bulky wet-machine boards (incorrect selection of wood, i.e., green pinewood) are described. E.S.

BOARD—EXPANSION AND CONTRACTION

STILLINGER, J. R., and CURRIER, R. A. Relative humidity, moisture content, and dimensional stability relationships in hardboard of three manufacturers. Oregon Forest Products Lab. (Corvallis) Rept. no. T-7: 14 p. + 16 plates (February, 1954).

Eleven types of commercial hardboard produced by three different companies were exposed to R.H.'s of 90, 80, 70, 60, 50, 40, 30, and 20% at 100°F., until an approximate equilibrium moisture content was reached. At each humidity level, weight, thickness, and linear dimensions were determined. The same types of hardboard were exposed to a single change in R.H. from 30 to 90% at the same temperature, and the rate of moisture absorption, thickness swelling, and linear expansion determined. To facilitate comparisons, the 11 types of hardboard were grouped into four classes. For each type of hardboard, empirical curves were drawn showing various relationships of moisture content, thickness swelling, linear expansion, R.H., and time. The following conclusions were deduced from the test results: Important differences were found in the amount of moisture absorption and dimensional changes which occurred during conditioning at different humidity levels. The equilibrium moisture content of commercial hardboard for a given R.H. and temperature level was definitely lower than the corresponding value for wood (approximately 50-75%). There was a very noticeable similarity in the shape of all the curves when moisture content, thickness swelling, and linear expansion each were plotted against R.H. A similar likeness was observed in the rate curves for the same properties when the hardboard products were exposed to a single wide change in humidity at the same temperature level. Either thickness swelling or linear expansion, when plotted against moisture content, produced a relationship close to linear for all hardboard products. The majority of the rate curves for moisture absorption, thickness swelling, and linear expansion exhibited fairly steep slopes during the early exposure periods, which gradually leveled off after three or four days. With few exceptions, each company's board exhibited differences in linear expansion with respect to the original machine direction of the board. 32 graphs. E.S.

BOARD, CORRUGATED

KEIM, CARROLL R. Starch adhesives for the manufacture of corrugated board. Allgem. Papier-Rundschau no. 21: 904-6 (Nov. 5, 1953). [In German] *cf.* B.I.P.C. 18: 470-1.

The advantages and limitation of starch corrugating (employed by approximately 80% of the American corrugated-board manufacturers) are reviewed;

a brief reference is made to wet-strength adhesives (starch-urea-formaldehyde combinations) used in the production of V- and W-type boards. E.S.

BOARD MILLS

ANON. A & P Corrugated Paper Box Corp. now operating new board division. Paper Mill News 77, no. 7: 10-15 (Feb. 13, 1954).

The new paperboard mill of A & P Corrugated Paper Box Corp. at Lawrence, Mass. is described. The machine and equipment, transferred from the Covington, Va. mill of West Virginia Pulp and Paper Co., include a seven-cylinder Black-Clawson machine and its auxiliary equipment, 90 driers, two stacks of calenders, three Dilts Hydrapulpers, two Shartle Brothers Hydrafuges, two Dilts Classifiners, and two Shartle Brothers air thickeners. A new Hamblet heavy-duty duplex cutter was added. A list of suppliers is appended. 9 illustrations. R.A.S.

ANON. A picture tour of the new hardboard mill at Klamath Falls. Paper Trade J. 138, no. 8: 14 (Feb. 19, 1954).

Five illustrations with captions outline some of the operations of the new Weyerhaeuser hardboard mill erected at Klamath Falls, Ore. alongside the company's Lumber Division. R.A.S.

GATES, JAMES E. The kraft-jute containerboard controversy. Fibre Containers 39, no. 1: 36, 38, 40, 45-6, 48, 50, 52, 56, 58 (January, 1954).

Supplemented by statistical data, the author discusses the problem whether or not the jute board mills as a group or individual mills will be able to survive any future depression. During the war and postwar periods the demand has been so great that both kraft and jute mills have operated full time for the most part, although since the great upsurge of kraft in the middle thirties, jute seems to have served as the reserve capacity of the industry. The kraft industry is now expanding its actual production and its relative proportion of the market, whereas the jute segment has maintained its own tonnage level; however, most of the large jute producers are now buying or building into the kraft segment and not expanding their jute operations. The question of what will happen to the remaining jute containerboard facilities depends upon a number of factors, including the future demand for containerboards, the plans to expand the kraft industry and the types of board contemplated for such an expansion, and the strengths and weaknesses of both industries. Some of the survival values inherent in jute operation include its flexible cost structure, the larger supply of kraft waste available which signifies a reduction in the cost of raw materials (kraft cuttings and kraft pulp), proximity of waste-paper supply, nearness to markets, and smaller investment than in kraft mills. In addition, increasing costs are beginning to set in in the kraft industry, such as longer hauls for pulpwood, higher stumpage costs, etc. The validity of all these factors is examined critically. The survival values will not hold uniformly for all jute mills. The last to go will be those in the large cities, like New York and Chicago, where the waste paper supply is automatic. It is not inconceivable that the folding-box industry will absorb the entire northern cylinder-machine capacity, and producers who possess both containerboard and boxboard mills should be able to make the transition gradually and easily. The problem of maintaining a reserve capacity for periods of stress (like the Korean situation) is also mentioned. 3 tables, 3 figures, and 18 footnotes. E.S.

BOARD SPECIALTIES

G. N. Which demands are placed on imitation chromo board? Allgem. Papier-Rundschau no. 22: 948-9 (Nov. 20, 1953). [In German]

Imitation chromo board is principally employed in the manufacture of folding boxes, and high demands are placed on it. The printer requires a facing sheet suitable for letterpress, lithography, and offset of great dimensional stability, free from splinters and even minute knots, of uniform caliper and smoothness throughout, which will lie perfectly flat and be fast to light; the converter expects satisfactory scoring and laminating properties. The darker color of the lower plies must not impair the usually pure white of the liner. When the board is to be embossed a certain plasticity is required to prevent bursting; this is contradictory to the printer's demand for dimensional stability. Directions for the boardmaker to fulfil these diversified demands are given, including selection of furnish, beating, sizing and, particularly, gradual drying; all sudden temperature rises must be carefully avoided. The boards are now generally manufactured on combination cylinder-Fourdrinier machines. Correctly stored and well-seasoned board will usually not cause any complaints. E.S.

K. R. Requirements of trunk boards. Allgem. Papier-Rundschau no. 22: 943-4 (Nov. 20, 1953). [In German]

Trunk boards were developed as a substitute for vulcanized fiber (trunk fiberboard) to eliminate the expensive chemical treatment; the highest demands are placed on this type of hardboard, such as high strength against mechanical damage from the outside, excellent bending and drawing properties, water resistance, and dimensional stability. Coarse linen rags and ropes, with an addition of woodfree chemical waste papers, dusted cement bags, etc. form the raw material. The pulp must be well beaten and fully sized, preferably with an addition of animal size. Latex increases the flexibility of the board and has given excellent results. Dyes (usually in leather shades) must be fast to light. The board is formed from thin plies on cylinder machines, pressed in hydraulic presses to about 50% moisture content, then either air dried or passed through moderately heated tunnel driers. The finished boards are frequently lacquered on one side, embossed in leather patterns, or covered with some kind of fabric. E.S.

RR. Matrix board as seen by the papermaker. Allgem. Papier-Rundschau no. 24: 1018-19 (Dec. 21, 1953). [In German]

Difficulties in the manufacture and use of dry-mat matrix board and possible remedies are discussed. E.S.

CALCULATIONS

DYRSSEN, GOTTFRIED. Disk calculator for paper in rolls. Allgem. Papier-Rundschau no. 21: 908-10 (Nov. 5, 1953). [In German] *cf.* B.I.P.C. 23: 208.

Reference is made to the measuring stick developed by the author for determining the weight of a paper roll by measuring its radius and reading off the corresponding weight. The method has the disadvantage that a separate stick is required for each roll width. To simplify the procedures, the author has prepared a calculator consisting of two circular disks secured together in the center, the lower and larger of which carries the radii in cm. and the upper and smaller the weights of the rolls for different widths.

Modifications of these charts to include in addition the data for different paper kinds, etc. and applications are described. 4 figures. E.S.

CEDAR

SOLOMKO, V. S. Kraft pulp from Siberian cedar. Bumazh. Prom. 28, no. 6: 6-9 (June, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 19: 10225 (Oct. 10, 1953). 6 tables and 3 diagrams. E.S.

CELLOPHANE

LEAHY, PAUL. Du Pont. Tappi 37, no. 2: 116-17A (February, 1954).

The conclusions drawn by the chief judge in Du Pont's cellophane antitrust suit are listed. The government charges that the company monopolized the sale of cellophane and of cellulose caps and bands were not found valid, and the complaint should therefore be dismissed. E.S.

CELLULOSE

STENIUS, ÅKE S:SON. The general discussion on cellulose held in Stockholm on July 31st 1953. Parts I and II. Svensk Papperstidn. 57, no. 1: 9-18; no. 2: 44-50 (Jan. 15, 31, 1954). [In English and German]

A somewhat condensed version of the controversial discussion on cellulose is presented. The first part dealt with the fibrillar structure, and the second part with the molecular order and chemical nature of the wood cellulose fiber. A list of the names of the 19 participants is appended. 2 tables, 16 figures, and 8 references. E.S.

CELLULOSE—HEMICELLULOSE

ADAMS, G. A. Constitution of a polyuronide hemicellulose from wheat leaf. Can. J. Chem. 32, no. 2: 186-94 (February, 1954).

Crude hemicellulose of mature wheat leaves has been prepared by alkaline extraction of leaf holocellulose. Purification by repeated complexing with Fehling's solution yielded a polyuronide hemicellulose ($[\alpha]^{25}_{D}$—93°) composed of D-xylose (88.5%), L-arabinose (6.9%), and uronic acid anhydride (5.27%). Methylation studies indicated a molecular structure comprising a main xylan chain of 30 anhydro-D-xylose residues to which three L-arabinose residues and one D-glucuronic acid unit were attached as side chains by glycosidic linkages. Periodate oxidation data supported the proposed structure, and the yield of formic acid indicated a molecule containing approximately 32 sugar residues. Estimations of the D.P. of the molecule by measurements of viscosity and reducing power agreed with the foregoing values. The structure of the hemicellulose closely resembled that of one isolated previously from wheat straw (*cf.* B.I.P.C. 23: 89-90). 5 tables and 13 references. E.S.

BUURMAN, A. Hemicellulose in the viscose rayon process; a chromatographic investigation. Textile Research J. 23, no. 12: 888-96 (December, 1953).

A chromatographic investigation of hemicellulose in rayon pulps is described. The composition of this hemicellulose, which is essentially a mixture of glucosans, mannans, and xylans, in addition to low-molecular-weight, non-

carbohydrate material, is dependent on the nature of the raw cellulosic material from which the pulp is manufactured and on the type of pulping process used. The hemicellulose found in the intermediate stages of the viscose process originates, for the greater part, from the hemicellulose originally present in the pulp. This is clearly demonstrated by the high percentages of mannose and xylose found in the corresponding hydrolyzates. The hemicellulose in the spun yarn, however, consists principally of short cellulose chains. The dependence of the quantity and the composition of the hemicellulose in the press lye on such variables as pressing factor, sodium hydroxide concentration, etc. has been investigated. The hemicellulose present in unaged and aged alkali cellulose and in the rayon produced therefrom has been analyzed. During the spinning and the aftertreatment of rayon, measurable quantities of hemicellulose were found only in the alkaline sodium sulfide aftertreatment bath. 4 tables and 12 figures. E.S.

SHARKOV, V. I., and DOBUSH, O. A. Hemicelluloses in technical cellulose. Bumazh. Prom. 28, no. 5: 14-18 (May, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 19: 10220-1 (Oct. 10, 1953). 7 tables, 4 diagrams, and 5 references. E.S.

CELLULOSE—HOLOCELLULOSE

KOEPPEN, A. v., and COHEN, W. E. A study of "chlorite" and "chlorine" holocelluloses prepared from *Eucalyptus regnans* F. v. M. Holzforschung 7, no. 4: 102-10 (1953). [In English; German summary]

The influence of temperature and chlorite dosage on the isolation of chlorite holocellulose from *Eucalyptus regnans* F. Muell. has been investigated. Temperature is more critical than has been supposed in the past, and many of the reported variable results have probably been caused by variation of temperature within the wide range specified. If the temperature exceeds 70°C., a significant pentosan loss is sustained. Application of sodium chlorite in stepwise fashion according to the reaction requirements, by performing the treatments in stages with intervening washes, has led to a two-stage method which gives satisfactory results. Criteria used in assessing the value of the various methods examined were: loss of pentosan to be negligible; residual lignin in holocellulose to be approximately 4%, and to have a methoxyl content of not less than 16%. For comparison of chlorite and chlorine holocelluloses, three samples from the same tree were prepared in the form of shavings. Chlorite holocellulose was obtained from one sample by a modified two-stage method and the other two were converted by the chlorine method with five and seven chlorinations respectively. The yields of carbohydrate fraction as chlorite and chlorine holocellulose with the same lignin contents were practically the same and very close to the theoretical yield. In the preparation of chlorine holocellulose of lower lignin content (seven chlorinations) some carbohydrate material was lost. No significant differences have been found in the cellulose contents of chlorine and chlorite holocellulose having the same lignin contents. Some secondary differences, higher nitrogen content of chlorine and higher ash content of chlorite holocelluloses, have also been observed. Greater losses of the carbohydrate fraction and especially of pentosan occur in the cases of extraction of chlorine holocellulose with hot water and with 0.2% sodium hydroxide. The largest differences which have been found between chlorite and chlorine holocelluloses were in the methoxyl contents of the residual lignin and of the holocelluloses. It seems therefore that in the preparation of chlorine holocellulose, chlorine water and basic

ammonia-alcohol solution do not only dissolve chlorolignin, but also split off some methoxyl from lignin and carbohydrates. This leads to the residual lignin in chlorine holocellulose becoming partly water soluble. Investigations have shown that the determination of residual lignin and of true carbohydrate contents of both chlorite and chlorine holocelluloses are unreliable. It seems that if the optimum conditions are applied, both methods are suitable for the isolation of the carbohydrate fraction from *E. regnans*. Because of the greater methoxyl losses during its preparation, chlorine holocellulose cannot be regarded as a suitable product for determining the methoxyl balance. 10 tables, 1 figure, and 35 references. E.S.

CELLULOSE—OXYCELLULOSE

KOMAROV, F. P. Advances in the oxidation of cellulose. Bumazh. Prom. 28, no. 1: 6-13 (January, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 10: 5113 (May 25, 1953). 7 tables, 2 figures, and 8 references. E.S.

STAKHEEVA-KAVERZNEVA, E. D., IVANOV, V. I., and SALOVA, A. S. Chemical transformations in cellulose under the action of hypochlorite. Bumazh. Prom. 28, no. 7: 6-11 (July, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 22: 12799-800 (Nov. 25, 1953). 1 table, 2 diagrams, and 5 references. E.S.

CELLULOSE—RADIOACTIVE EXPERIMENTS

BOURNE, E. J., and WEIGEL, H. [^{14}C]-Cellulose from *Acetobacter acetigenum*. Chemistry & Industry no. 5: 132 (Jan. 30, 1954).

By growing cultures of *Acetobacter acetigenum* in a medium containing DL-[*carboxy*-^{14}C]-lactic acid, [^{14}C]-cellulose was produced. Paper chromatography of the hydrolyzate showed only one radioactive spot, corresponding in R_f to glucose. The C^{14} is symmetrically distributed—1-2% each in carbons 1 and 6, 11-12% each in carbons 2 and 5, and 36-37% each in carbons 3 and 4. This suggests that the glucose units in cellulose arise by fusion of two three-carbon fragments. 1 table and 4 references. K.W.,Jr.

CELLULOSE ETHERS

ALLGÉN, LARS-GÖRAN, and ROSWALL, SIW. A dielectric study of a carboxymethylcellulose in aqueous solution. J. Polymer Sci. 12, no. 67: 229-35; discussion: 236 (January, 1954). [In English; French and German summaries]

A carboxymethylcellulose sodium salt (I) with about 50% of the glucose units substituted, has been studied dielectrically by the "ellipsoid method" at various wavelengths. Aqueous solutions containing 0.1-0.0025 grams/100 ml. were investigated. Dielectric increments of 2-9 dielectric constant units were obtained for these solutions. The calculated increment/gram/liter was not constant but increased considerably at the lowest concentrations, indicating the prevalence of polar molecules or aggregates at the lowest concentrations, whereas less polar aggregates dominate at higher concentrations (more than 0.01% solutions). At the lowest concentration studied, 0.0023%, the increment/gram/liter was about 120, corresponding to a molar increment of about 55,000,000. Dielectric dispersion curves were obtained which approached theoretical Debye dispersions, indicating that the (I) molecules are rather rigid. The dispersion curves were displaced toward

shorter wavelengths with increasing concentration, probably resulting from the strong molecular interaction. At the lowest concentration a relaxation time of 4.6×10^{-7} sec. was calculated for the (I) molecule. This corresponds to a rotation of the molecules about their long axes in the electric field. An average molecular weight of about 460,000 was calculated for the (I) molecules, or polar aggregates, in very dilute aqueous solution. The electric moment of (I) was estimated to be about 1000 Debye units. In contrast to (I), the uncharged polysaccharides dextran and ethyloxyethylcellulose did not show any deviation of the dielectric constant values from that of the pure solvent, when investigated in 0.5% aqueous solutions at various wavelengths. It was concluded that the dielectric properties of (I) are very similar to those of other polyelectrolytes studied, such as desoxyribonucleic acid, nucleohistone, and hyaluronic acid. 2 tables, 5 figures, and 6 references. E.S.

JULLANDER, INGVAR. Water-soluble cellulose ethers—their preparation, properties, and applications. Svensk Kem. Tidskr. 65, no. 11: 223-40 (1953); Chimie & industrie 71, no. 2: 288-9 (February, 1954). [In Swedish and French]

Following a brief historical introduction on the earliest patents covering cellulose ethers, the commercially available types (including trade names and manufacturers), their preparation, properties (viscosity, film formation, surface tension, and structure of solutions), and important applications are reviewed. 1 table, 18 figures, and 15 references. E.S.

NIEUWENHUIS, K. J. Improvement of the dirt suspending power of CMC. J. Polymer Sci. 12, no. 67: 237-51; discussion: 251-2 (January, 1954). [In English; French and German summaries]

The effects of various properties of sodium carboxymethylcellulose (I) on the dirt-suspending power of a typical soap detergent mixture were determined. Theoretical considerations indicated that: (1) the D.S. should be about 0.5; (2) the substitution should be as uniform as possible; and (3) the cellulose chains should be neither very short nor very long. These considerations were confirmed experimentally. The dirt-suspending power was greatest when the product had a D.S. between 0.48 and 0.53, a buffered viscosity [1% (I) solids] between 11 and 29 centipoises, and a fiber content below 4%. Greater uniformity of substitution was obtained by dispersing the cellulose and reagents in a suspending liquid such as alcohol or a hydrocarbon than by the so-called "dry mixing" method wherein the cellulose, sodium hydroxide, sodium chloroacetate, and a small amount of water are mixed. 5 tables, 2 figures, and 41 references. J.W.S.

WURZ, OTTO, and WURZ, ERICH. Possibilities for the application of carboxymethylcellulose in the textile industry. Textil-Rundschau 8, no. 10: 557-60 (October, 1953). [In German] *cf.* B.I.P.C. 24: 184-5.

The properties and possible applications of Polyfibron (trade name of carboxymethylcellulose manufactured in Austria) for sizing, finishing, and printing textiles are outlined. 3 tables and 2 references. E.S.

CHEMICAL ENGINEERING

JENNESS, L. C. The chemical engineer and the pulp and paper industry. Tappi 37, no. 2: 132-4A (February, 1954); *cf.* B.I.P.C. 23: 240.

The principles of material balances, heat balances, ideal contact, and rates of operations are viewed as fundamental tools of a chemical engineer; applications of these tools in the pulp and paper industry are given. The contributions of industry to the educational program of the University of Maine are reviewed. R.A.S.

CHEMICAL TESTING—BLACK LIQUOR

DZHELYUK, S. P. The volumetric determination of sulfate in kraft liquors. Bumazh. Prom. 28, no. 10: 21-3 (October, 1953). [In Russian]

For abstract *cf.* C.A. 48, no. 3: 1678 (Feb. 10, 1954). 4 tables. E.S.

CHEMICAL TESTING—CARBOHYDRATES

LAUNER, HERBERT F., and TOMIMATSU, YOSHIO. Reaction between chlorous acid and glucose; quantitative stoichiometry and evaluation of reagent decomposition. Anal. Chem. 26, no. 2: 382-6 (February, 1954).

Sodium chlorite in weak acid is a potentially important reagent for quantitative carbohydrate chemistry, because it is specific for aldoses or aldehyde groups and because it cannot cause the side reactions usually undergone by alkali-sensitive carbohydrates in the presence of the alkaline media of present reagents. Therefore, the reaction between chlorite and glucose as a model substance was studied. The stoichiometry of the reaction was shown to involve 3 moles of chlorous acid/mole of glucose. As the reagent not only oxidizes but also simultaneously decomposes glucose, it was necessary to account quantitatively for decomposition by assuming that the rate of the latter is proportional to the geometric mean of the chlorite concentration. This led to a simple analytical expression found to hold over the ranges 0.000004 to 0.0003 *M* glucose, 0.0005 to 0.0032 *M* chlorite, pH 2.4 to 3.4, at 50°C. Thus, glucose down to 0.6γ per ml. can be determined by this method. 2 tables, 3 figures, and 23 references. E.S.

CHEMICAL TESTING—CELLULOSE

CHATTERJEE, H., PAL, K. B., and SARKAR, P. B. Molecular weight of α-cellulose from jute and allied long fibers. Textile Research J. 24, no. 1: 43-52 (January, 1954).

Four methods commonly employed for the estimation of cellulose, with special reference to jute, have been critically studied by means of viscosity measurements (and hence molecular weight) of the α-cellulose obtained with each in cuprammonium hydroxide. The cellulose molecule is degraded to different extents by all the methods of delignification; the Cross and Bevan method, however, appears to give the least degraded product. Pure cellulose is much more degraded than lignocelluloses. Generally, the use of caustic soda higher in concentration than 9.3% to extract α-cellulose or mechanical action of disintegration of the material brings about further degradation. The molecular weights of α-cellulose from different fibers have been determined. From the results thus obtained, a formula is suggested to calculate the intrinsic viscosity and, hence, molecular weight, from the relative viscosity of a cellulose solution at a single concentration. 10 tables, 4 diagrams, and 53 references. E.S.

GRAN, GUNNAR, and WILSON, KARIN. International standards. Tappi 37, no. 2: 129-30A (February, 1954); *cf.* abstract below.

A similar report as in the following paper by Rutishauser is presented. No formal organization was set up, but a secretary and one representative from each country were appointed. Countries not represented at the Stockholm meeting will be contacted in the near future. E.S.

RUTISHAUSER, M. Efforts for an international standardization of cellulose testing procedures. Textil-Rundschau 8, no. 10: 562-3 (October, 1953). [In German]

Reference is made to a meeting during the 13th International Congress of Pure and Applied Chemistry in Stockholm under the presidency of E. Häggblund for the purpose of arriving at uniform testing procedures for cellulose in different countries. Twenty-five delegates from 11 nations participated. Alkali solubility (Swedish standard CCA 8 of 1953) and viscosity determination were the two first methods selected for discussion and study. K. Wilson was appointed preliminary secretary of an international analysis committee. E.S.

CHEMICAL TESTING—CELLULOSE—FRACTIONATION

SIHTOLA, HANNES, KAILA, ERMO, and VIRKOLA, NILS. Fractionation of high polymers by lowering the temperature of the solution. Makromol. Chem. 11, no. 1: 70-8 (October, 1953). [In English; German summary]

A method has been developed to determine the distribution of the molecular weights of the high polymers. The basis of this method is the separation of the fractions by lowering the temperature of a solution of the polymer containing a precipitant. Experiments have shown that the reproducibility of the method is good. By using a constant solvent/precipitant ratio in different fractionations, it is possible, from the temperature of precipitation, to estimate approximately the limiting viscosity number of the fraction obtained. 3 tables, 5 figures, and 8 references. E.S.

CHEMICAL TESTING—CELLULOSE—URONIC ACIDS

JOHANSSON, AXEL, LINDBERG, BENGT, and THEANDER, OLOF. Semimicro determination of uronic acids. Svensk Papperstidn. 57, no. 2: 41-3 (Jan. 31, 1954). [In English]

A semimicro quantitative method for the determination of uronic acid in polysaccharides is described. The uronic acid is decarboxylated with 12% hydrochloric acid, and the carbon dioxide is absorbed in a solution of sodium hydroxide and barium chloride. The barium carbonate formed is filtered after neutralization of the solution with ammonium chloride and then transformed into barium iodate, which is dissolved and titrated iodometrically. 4 tables, 1 figure, and 2 references. E.S.

CHEMICAL TESTING—PULP—TURBIDITY VALUE

VEREIN DER ZELLSTOFF- UND PAPIER-CHEMIKER UND -INGENIEURE. *Fachausschuss für Reyon, Zellwolle und Folien.* Testing the suitability of pulps for acetylation. Merkblatt III/1, suggested standard method. 2 p. (July 1, 1953). [In German]

A method for estimating the suitability of pulps for acetylation is presented in which the pulp is acetylated to the triacetate stage under controlled conditions. It is evaluated according to four criteria: (1) the time required

for complete acetylation (disappearance of fibers from solution); (2) filterability (amount passing through a standard filter in a given time); (3) viscosity of solution, either capillary or falling ball; and (4) clarity of solution in a simple turbidimeter. K.W.,Jr.

CHEMICAL TESTING—SULFITE WASTE LIQUOR

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Total water in pulp mill spent liquors. Tappi 37, no. 2: 127-9A (February, 1954).

The text of TAPPI Suggested Method T 641 sm-54 is presented, which is based on a modification of the Karl Fischer titration for water and applicable to spent liquors from calcium, magnesium, ammonia, kraft, and semi-chemical processes. It is not a TAPPI Standard and criticisms are requested. 2 diagrams and 3 references. E.S.

CHEMICAL TESTING—SULFUR

VEREIN DER ZELLSTOFF- UND PAPIER-CHEMIKER UND -INGENIEURE. *Fachausschuss für Zellstofferzeugung.* Determination of sulfur content of pyrites. Merkblatt I/3, accepted standard method. 3 p. (June 1, 1953). [In German]

Directions are given for taking and grinding the sample and for determining the water content. The sulfur is oxidized to sulfate by a mixture of nitric and hydrochloric acids at room temperature. When the reaction is complete, the mixture is heated and evaporated to dryness; the residue is taken up in dilute hydrochloric acid, and the solution is filtered. The iron is removed by precipitating with ammonia and filtering. The filtrate is acidified, hot barium chloride solution is added, and the precipitated barium sulfate is separated by filtration, ignited, and weighed. B.L.B.

CHEMICAL TESTING—SULFUR DIOXIDE

VEREIN DER ZELLSTOFF- UND PAPIER-CHEMIKER UND -INGENIEURE. *Fachausschuss für Zellstofferzeugung.* Determination of sulfur dioxide gases from roasting. Merkblatt I/4, accepted standard method. 2 p. (July 1, 1953). [In German]

The sulfur dioxide is absorbed and oxidized by passing the gas through a 250-ml. absorption bottle containing a measured quantity of 0.1 *N* iodine solution, potassium iodide solution, and hydrochloric acid. The amount of gas passed through is measured by displacement of water from a second bottle into a graduated cylinder. When 200 ml. of water has been collected, the excess iodine is determined by titration. The sulfur dioxide is calculated as a percentage by volume of the burner gases. 1 illustration. B.L.B.

CHEMICALS

PALENIK, KAROL, and WINCZAKIEWICZ, ANDRZEJ. New chemical auxiliary products in the paper industry. Przeglad Papierniczy 9, no. 1: 12-18 (January, 1953). [In Polish; Russian and English summaries]

For abstract *cf.* C.A. 47, no. 12: 6137 (June 25, 1953). 19 references. E.S.

CHLORINE DIOXIDE

ANON. Pennsalt offers pulp mills chlorine dioxide bleaching. Chem. Eng. 61, no. 2: 385-6 (February, 1954).

Pennsylvania Salt Manufacturing Co. is offering pulp and paper mills a chlorine dioxide generation and bleaching system; because of its relatively small size the generator can be housed within the existing buildings of most bleach plants. The process operates continuously. Pennsalt has constructed a portable pilot plant which can be set up in mills for trial runs. The chlorine dioxide is generated from acidified chlorates (Pennsalt is a producer of chlorates) by the reducing action of sulfur dioxide. E.S.

SENDER-LAPINSKA, IRENA. Chlorine dioxide as agent for bleaching cellulose pulps; properties and methods of production. Przeglad Papierniczy 9, no. 6: 161-5 (June, 1953). [In Polish; Russian and English summaries]

For abstract *cf.* C.A. 47, no. 19: 10226 (Oct. 10, 1953). 3 tables, 3 diagrams, and 13 references. E.S.

CHROMATOGRAPHY

GEERDES, J. D., LEWIS, BERTHA A., MONTGOMERY, REX, and SMITH, FRED. Chromatographic separation of sugars with hydrocellulose. Anal. Chem. 26, no. 2: 264-6 (February, 1954).

Although cellulose and certain types of modified cellulose have been used successfully for separating various mixtures of sugars and their methyl ethers, there is need of an adsorbent with a better resolving power and a greater capacity. The process of dissolving cellulose powder in phosphoric acid, followed by precipitation with water, produced a desirable hydrocellulose for use in the chromatographic separation of methylated sugars. Both the resolving power and capacity of this hydrocellulose were superior to other cellulose adsorbents. However, this improvement did not extend to the separation of free sugars. It is believed that part of the success of the modified column is due to the top of the adsorbent being kept in place by a glass-enclosed metal weight. The anomeric forms of ethyl-L-rhamnofuranoside have been separated. The increased capacity and improved resolution obtained with the modified columns make it possible to effect separation of practical amounts of methylated sugars without being involved in the slow development rates of larger columns. 1 table, 1 figure, and 13 references. E.S.

WOOD, SCOTT E., and STRAIN, HAROLD H. Flow and distribution of solutions in filter paper; influence in paper chromatography. Anal. Chem. 26, no. 2: 260-4 (February, 1954).

The flow and distribution of water and solutions in paper have been investigated in an effort to place paper chromatography on a more quantitative basis. In upward flow in vertical strips of filter paper the rate of boundary migration between dry and moist paper decreases rapidly, and the amount of water per unit weight of paper decreases from the base of the strip to the advancing water boundary; the migration of the boundary between dry and moist paper for downward flow in vertical strips of paper is nearly uniform. With downward flow in dry paper, the water distribution in the paper decreases slightly from the top of the strip to the advancing water boundary, but with downward flow in moist paper the water distribution is nearly uniform. The rate of boundary migration between dry and

moist paper for radial flow in horizontal sheets of paper decreases rapidly, and the water distribution varies with the distance from the point where water or solution is added. The rate of migration of methyl orange dissolved in lactic acid solution, relative to the rate of migration of the solvent (*R* value) decreases slowly for upward flow but is constant, within experimental error, for downward and radial flow. The *R* value of fluorescein in radial flow decreases slightly. These results have been correlated with the quantity and the nonuniform distribution of the solution in the paper. They have an important bearing upon the migration and the definition of zones in practical chromatographic separations. 4 tables and 13 references. E.S.

COLOR

SCHWEISHEIMER, W. Colour in the paper industry. Pulp Paper Mag. Can. 55, no. 1: 160, 164 (January, 1954).

The psychological effect on the worker by the use of bright colors is claimed to increase production. A drop in accidents is also reported as the result of color selection as designated in the safety color code. R.A.S.

CORROSION

MOSHER, JOHN P. Corrosion proofing with vapour phase inhibitors. Can. Chem. Processing 37, no. 13: 64 (December, 1953).

The author discusses the V.P.I. materials currently marketed by Shell Oil Company of Canada; they may be applied in four distinct ways: as powder, solution, coating on paper, or in conjunction with a plastic material. The inhibitors can be used wherever the rusting of ferrous metals presents a problem. E.S.

CYMENE

SMIRNOW, ANATOL. Importance of *p*-cymene in the process of cooking cellulose pulp. Przeglad Papierniczy 9, no. 1: 18-25 (January, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 12: 6135 (June 25, 1953). 12 tables and 12 references. E.S.

SMIRNOW, ANATOL. Isolation and purification of raw cymene. Przeglad Papierniczy 9, no. 2: 44-5 (February, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 11: 5680 (June 10, 1953). 2 diagrams. E.S.

DESICCANTS

ANON. Humidity nurtures a market. Chem. Week 74, no. 7: 70-4 (Feb. 13, 1954).

The outlook and peacetime applications for desiccants, particularly in food, drug, and cigarette packaging, are described. Silica gel and clay-type desiccants share the market quite uniformly. The biggest obstacle to greater consumption was so far the high relative cost of the desiccant container. This problem is being overcome by packaging developments, including envelopes of paper, fabric, cellulose acetate, etc. 2 illustrations. E.S.

HUBARD, STEPHEN S. Equilibrium data for silica gel and water vapor. Ind. Eng. Chem. 46, no. 2: 356-8 (February, 1954).

Revised data on equilibria between water vapor and silica gel of current commercial production are presented graphically as isopiestics and isothermals,

with comments on precision and considerable discussion of their application and of other factors to be considered in the performance of silica gel as a desiccant. A sample calculation relating the data to air-drier design is given. Such data are fundamental in calculating silica gel quantity requirements for given performance conditions and in establishing the range of conditions over which silica gel will function as a desiccant. The ability of the gel to provide air of very low effluent dew points is indicated. 1 table, 2 figures, and 4 references. E.S.

DRYING—PAPER

YOUNG, C. A. [Chairman] Panel discussion on drying and ventilating. Tappi 37, no. 2: 122-6A (February, 1954).

The text of the discussion held at the Eighth Engineering Conference of TAPPI, Oct. 27, 1953 in Philadelphia is presented. E.S.

DYES AND DYEING

ANON. More to meet the eye. Chem. Week 74, no. 9: 58, 60 (Feb. 27, 1954).

The use of fluorescent dyes for brightening textiles, paints, paper, hair shampoos, paper-coating lacquers, etc. is discussed. 1 illustration. E.S.

BILSBURY, MARJORIE M., MARTIN, J. T., and STANDING, H. A. The absorption of Chrysophenine G by cotton and by acidic oxycelluloses. J. Textile Inst. 45, no. 1: T1-20 (January, 1954); *cf.* B.I.P.C. 19: 769.

The equilibrium absorption of Chrysophenine G by cotton cellulose and by acidic (carboxyl-containing) oxycelluloses prepared from it has been investigated. The introduction of carboxyl groups into the cotton cellulose by oxidation results in a lowering of the absorption of the dye from solutions at pH 7, but not from solutions at pH 3, the effect being greater at low than at high salt concentration. When the pH and the salt concentration are kept constant, the isotherms relating the absorption to the concentration of dye in the solution fit the Freundlich equation; the exponent n does not increase significantly with increasing carboxyl content of the cellulose material. For cotton the relation between the salt-dye ratio and the substantivity ratio is almost independent of the dyebath composition over a limited range of salt concentration; there are, however, small deviations from a unique relation. For the acidic oxycelluloses the substantivity ratio at a constant salt-dye ratio decreases considerably with decreasing salt concentration—an effect predicted by theory. Supplementary measurements with viscose sheet, which may be regarded as a regenerated acidic oxycellulose, show that the relation between salt-dye ratio and substantivity ratio depends partly on the degree of swelling of the sheet. The significance of these results is discussed. 8 tables, 10 diagrams, and 11 references. E.S.

STANDING, H. A. The direct dyeing of cellulose: a method for the analysis of equilibrium absorption data in terms of current quantitative theories. J. Textile Inst. 45, no. 1: T21-9 (January, 1954).

Each of the equations derived from current theoretical treatments of the equilibrium between cellulose materials and direct dyes can be reduced to the same form, which expresses a unique relation between the substantivity ratio q and the salt-dye ratio p; this form is here called the p, q equation and

it contains two empirical constants A and B. It is a convenient form for testing the fit of experimental absorption data to the quantitative theories. The values of the constants A and B can be readily determined from suitable data that fit the p, q equation. The more fundamental constants used in individual current treatments can easily be calculated from A and B. In particular, values may be calculated for the quantity V having the dimensions of a specific volume (which occurs in all the equations) and for the thermodynamic affinity of the dye for cellulose which occurs in the equation of Peters and Vickerstaff (*cf.* B.I.P.C. 19: 313). To illustrate the method, the author attempts to fit data for the absorption of Chrysophenine G by cotton and mercerized cotton to the p, q equation. Except as an approximation and over a limited range of salt concentration, no fit is obtained with the data for cotton. The calculation of a constant V or of thermodynamic affinity from these data is therefore not possible on the basis of the theories. They fail to correlate the available data for the absorption of the dye at 90°C. by mercerized cotton with those available for its absorption by nonmercerized cotton at the same temperature. 5 figures and 7 references. E.S.

ENZYMES

KUNG, JO-FEN TUNG, HANRAHAN, VIRGINIA M., and CALDWELL, M. L. A comparison of the action of several alpha amylases upon a linear fraction from corn starch. J. Am. Chem. Soc. 75, no. 22: 5548-54 (Nov. 20, 1953).

The actions of a variety of α-amylases on the linear fraction of cornstarch were studied in terms of blue values (*cf.* B.I.P.C. 13: 452) and reducing values. The data show that all α-amylases rapidly hydrolyze the linear substrate to products which do not give colored complexes with iodine and which finally have 7-13 glucose residues. However, the course of the earlier stages of hydrolysis differs markedly from amylase to amylase as shown by the percentage of glucosidic linkages of the substrate broken to reach the achroic stage: swine pancreatic amylase, 23%; swine salivary amylase, 20.5%; human pancreatic or salivary amylase, 14.5%; bacterial, *subtilis*, amylase, 12%; and taka amylase, 12%. Amylases from various organs of a rat resemble human amylases. An unfavorable pH may decrease enzyme activity but does not influence its unique action. It is concluded that amylases do not hydrolyze glucosidic linkages in the completely random manner during the early stages of action. However, the final products of hydrolysis may or may not differ. 6 tables, 6 diagrams, and 39 footnotes. J.W.S.

WATSON, R. W. Research on industrial enzymes. Can. Chem. Processing 37, no. 13: 72, 74, 76 (December, 1953).

Progress during 1952 is reviewed, with particular reference to amylases, proteases, pectic enzymes, glucose oxidase, and penicillinase. 31 references. E.S.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

ANON. Picture story tells steps in sulfite evaporation. Pulp & Paper 28, no. 2: 78, 80 (February, 1954).

The spent-liquor evaporation and burning plant of Northern Paper Mills (subsidiary of Marathon Corp.), Green Bay, Wis. is described in a series of eight pictures. The major equipment of the plant is the Conkey flat plate Rosenblad switch system evaporators; two boilers were converted to burn the concentrated liquor, along with powdered coal. 8 illustrations. E.S.

FIBER—IDENTIFICATION

KOCH, PAUL-A. Man-made fiber data sheets. Modern Textiles 35, no. 1: 36, 42, 44-6 (January, 1954).

This is a translation of a German article (originally published in Z. ges. Textil-Ind.) listing microscopical and chemical tests for the identification of synthetic fibers and differentiation between them. 3 tables, 25 diagrams (cross sections of chemical fibers), and 10 references. E.S.

FIBER—TESTING

HOPPER, T. H., and TALLANT, J. D. Deviations in instrumental evaluation of the physical properties of cotton. Textile Research J. 24, no. 1: 53-7 (January, 1954).

Through interlaboratory testing of samples of nine lots of blended cottons, data have been obtained to indicate deviations in test results as presently obtained in and between laboratories in the use of the Fibrograph, Pressley, and Micronaire instruments for the evaluation of length, strength, and fineness, respectively. The precision attained by a group of laboratories maintaining the standard atmosphere and making five or more tests per sample is indicated by a standard deviation of 0.012 inch Fibrograph upper-half mean length and of 0.2 units in Pressley index of strength for individual observations. Similarly, the precision of mean values for the laboratories meeting the above criteria is indicated by a standard deviation of 0.018 inch Fibrograph upper-half mean length, 0.2 units Pressley index of strength, and 0.15 units Micronaire fineness. The between-sample mean values of the standard deviations observed for a single laboratory testing 10 samples of each of the nine check cottons were 0.008, 0.08, and 0.04, respectively. It may be postulated that the agreement or precision between laboratories may be greatly improved by adherence to a single source of test procedures, use of standard atmospheric conditions of 65% R.H. and 70°F., and general use of standardized check cottons to maintain a uniform level of testing. Deviations of results in testing classers' samples are expected to be larger than those observed in this study unless the blending and subsampling are done as thoroughly as in preparing these check samples. 8 tables and 4 references. E.S.

FINISHING ROOM

GRAY, J. L. The finishing department. World's Paper Trade Rev. 141, no. 7: 504, 507-8, 510, 512, 514 (Feb. 18, 1954).

Activities and problems concerning the finishing department of a paper mill are discussed under the headings: cutting, static electricity, cutting watermarked papers, sorting and finishing, skill and concentration, counting, wrapping and labeling, packing for export, loading for transit, storage, layout of the finishing room, automatic ream wrapping and labeling, and organization of the work. R.A.S.

FIRE PREVENTION

MAX, R. C. Fire protection in pulp and paper mills. Tappi 37, no. 2: 65-72 (February, 1954).

The author discusses factors which tend to bring about a higher degree of fire safety in pulp and paper mills with an aim toward building up defenses to attain the status of a fire-safe plant. Topics of discussion include building construction, sprinkler protection, special hazard protection, paper mill occupancy protection, and particularly danger points in production processes

from a fire and explosion standpoint, protection of pulpwood yards, potential electrical fire hazards and safeguards, importance and extent of employee fire brigade organization, and typical fires, together with a word on the elimination of fire causes and on salvage possibilities. The importance of full cooperation of management, supervision, and labor personnel in developing and maintaining a fire safety attitude at a high level is emphasized. 3 illustrations. E.S.

FOAM

KLEINERT, THEODOR, and RUCK-FLORIANTSCHITSCH, MARIETTA. Foam formation in spent sulfite liquors. Das Papier 8, no. 1/2: 13-17 (January, 1954). [In German; English and French summaries] *cf.* B.I.P.C. 22: 615.

Spent sulfite liquors have a strong tendency for foaming, even in considerable dilution; in addition, the foam frequently exhibits an extraordinary stability, particularly that from spent beech sulfite liquors (I). In the present article, foam formation and stability were studied in model experiments. It was found that foaming is a complex process which depends on the interaction of several factors, whereby volume and stability are affected to different degrees. All foam samples investigated represented three-phase systems. Stable foams always contained capillary-active substances and, in addition, considerable quantities of fibers and fiber fragments rich in extractives. From the ether extracts of the fibrous fragments of stable foams of (I), substances closely related to beechwood lignin with a high methoxyl content (23-24%, possibly open or cyclic structures of diarylbutanes) precipitated. These highly capillary-active substances play an important role in the foaming of (I). The foam volume or height of fibrous or fiber-free spent liquors increases with increasing liquor concentration; it is comparatively low in acid pH ranges, but increases in the alkaline range. With fiber contents of 0.5 gram/liter maxima of foam height are obtained which, however, decrease on further additions of fibers. The stability of the foam behaves in a quite different manner; in (I) it depends to a great extent on the age. The stability of aged (I) is almost four times as great as that of fresh liquors. The highest stabilities were found for dilutions from 1:30 to 1:100. In the neutral range, foam stability is at a minimum, but increases considerably in either alkaline or acid ranges. Foam volume and stability are little influenced by temperature changes between 0 and 25°C.; heating to higher temperatures destroys the foam. Foam formation is most pronounced during the cold season. Experiments with original (II) and biologically treated (III) liquors showed that (III) foams far less than (II). The activity of microorganisms which consume the sugars in (II) is much reduced during the winter, which probably accounts for the increased foaming tendency during this period. Increasing rosin-size additions to the spent liquors cause only an insignificant increase in foam volume, with simultaneous strong decrease in stability. The authors postulate the following possible mechanism of foam formation in spent liquors. The capillary-active substances are first adsorbed by the fiber surfaces rendering them hydrophobic. The difference in surface tension between liquid and adsorbed phases, in the presence of a favorable air distribution (for instance during flow over a weir, etc.), causes foaming. 1 table, 5 figures, and 12 footnotes. E.S.

MANSELL, G. F. J., and SAUNDERS, K. C. A novel system of eliminating bubbles on the Fourdrinier wire. World's Paper Trade Rev. 140, no. 27: 2045-6, 2048, 2050, 2055-6, 2058 (Dec. 31, 1953).

The system described for eliminating bubbles on the Fourdrinier wire (which is the subject of a patent application) involves the spraying of an

antifoam compound (an ethylene oxide condensate of a fatty acid in liquid form which is readily emulsifiable in water without any emulsifying agent) onto the surface of the stock shortly after it has left the slice. The method is better than mixing an antifoam compound with the stock before it reaches the slice, since it greatly reduces the amount of chemical required and its activity is concentrated at the surface just where it is wanted. The results have also shown that spraying with an antifoam compound is preferable to the common practice of using steam jets in that the effect is more complete, the cost less, and raising of the humidity of the machine-room atmosphere is avoided. The method outlined has been found satisfactory for the elimination of air bells from newsprint, and there is no reason to suppose that it would be ineffective in other cases. However, in any other application the effect of the chemical on the properties of the paper, for example, sizing, wet strength, etc. would have to be considered. 7 figures. E.S.

FOREST FIRES

ROBINSON, DAN D. A study of power saw fires. Pulp Paper Mag. Can. 55, no. 1: 129-30, 132, 134, 136-8 (January, 1954).

The increase in forest area burned by power saw operation fires since 1949 led to an investigation of the problem, the results of which are presented. An attempt was made to differentiate between fires caused by deficiencies in the saws and those attributable to carelessness or inexperience on the part of the operator. Safe operating precautions, power saw characteristics bearing upon fire hazard, and general recommendations for fire prevention in power saw operation are listed. 3 tables. R.A.S.

FORESTS AND FORESTRY

ANON. Modern equipment and good management give Gulf States high quality forest stands. Pulp & Paper 28, no. 2: 90, 92 (February, 1954).

The activities and policies of the Forestry Division of the Gulf States Paper Corp., Tuscaloosa, Ala. are briefly outlined. 7 illustrations. E.S.

BERGER, THORGEIR. Management problems connected with natural reproduction in coniferous forests. Norsk Skogind. 8, no. 1: 16-20 (January, 1954). [In Norwegian; English summary]

Small-dimension stock (I) has caused many problems in forestry; the disposal of (I) very often does not even cover the expense of felling and transportation. (I) is usually unfit for pulping purposes. The amount of (I) can be considerably reduced by drastic silvicultural measures taken at an early stage of natural regeneration, thereby increasing the production of suitable wood for the pulp industry. To date no recommendations from the Norwegian Forest Experimental Department with regard to modern cultivation of young stands through controlled distances and heights are available, so that every forester has to work out his own solution. The policies adopted in the forests of Mathiesen-Eidsvold Vaerk are discussed, including cost data. 1 table and 4 figures. E.S.

WALKER, J. F. A pulp and paper company's approach to extension forestry with particular reference to tree farms and farm woodlots. Pulp Paper Mag. Can. 55, no. 1: 120, 122, 124, 126 (January, 1954).

The author discusses the future of forest management, extension forestry, the work of industrial foresters, farm woodlots, marketing service for forest

products, and forest communities. Particular reference is made to the experiences of the Ontario Paper Co. on Manitoulin Island and the work there on pulpwood quality, fire protection, reforestation, school forestry, co-operation with the Department of Agriculture, and assistance to woodlot owners. 20 references. R.A.S.

FORESTS AND FORESTRY—PUBLIC RELATIONS

THOMAS, BERWYN B. Postage stamps tell forest industries importance. Pulp & Paper 28, no. 2: 72, 74, 76 (February, 1954).

The author describes the significance of a collection of postage stamps depicting forest scenes, tree species, individual trees, logging operations, uses of wood, the pulp and paper industry, and conservation. The collection, which was displayed at the annual Forest Festival at Shelton, Wash., includes 180 stamps from all over the world. 9 illustrations and 2 references. R.A.S.

FORGERY

BLACK, DAVID A. The microscope in document examination. Educational Focus (Bausch & Lomb Optical Co.) 25, no. 1: 20-4 (February, 1954).

Examples are given to illustrate different applications of the microscope (including the stereomicroscope and comparison microscope) in establishing the authenticity or fraudulence of documents. 5 illustrations. E.S.

CLARK, NEIL M. Paper detective. Saturday Evening Post 226, no. 35: 27, 124-6 (Feb. 27, 1954).

An account with examples is given of Dard Hunter's activity as paper expert for identifying the correct age of documents or old books or any problems involving a knowledge of paper and its constituents in frauds and similar cases. Biographical details of his life and accomplishments as papermaker and printer, traveler and collector, and curator of the Dard Hunter Paper Museum at the Massachusetts Institute of Technology are included. 1 illustration. E.S.

FUNGI

BUCKLAND, D. C., MOLNAR, A. C., and WALLIS, G. W. Yellow laminated root rot of Douglas fir. Can. J. Botany 32, no. 1: 69-81 + 3 plates (January, 1954).

Yellow laminated root rot occurs in most native conifers throughout the range of Douglas-fir in British Columbia. The cause of this disease has been ascribed to a variety of *Poria weirii* Murr., or a species of *Poria* distinct from *P. weirii*. The fungus grows from infected to healthy roots through physiologically weakened contacting points or fusions, and the disease is most prevalent in Douglas-fir because of the common occurrence of root fusion in this species. Douglas-fir is susceptible at any age over six years but individual trees show marked differences in their resistance to killing by the disease. The symptom picture varies greatly between infected trees and is directly related to the resistance shown by the individual host. Inoculum may remain viable for over 50 years in stumps and roots. The fungus does not appear to spread through the soil nor does it appear to be able to penetrate healthy bark tissue. Although the control of this disease is currently important in many localized areas, several characteristics in the behavior of the causal fungus indicate that it will become more important as management of second-growth Douglas-fir forests becomes more intensive. 20 figures and 12 references. E.S.

LIESE, WALTER, and HARTMANN-FAHNENBROCK, MARGARETE. Electron-microscopic investigations of blue-stained pinewood. Holzforschung 7, no. 4: 97-102 + 2 plates (1953). [In German; English summary]

The purpose of the present study was the determination of the method of growth of *Scopularia phycomyces* (blue stain) mycelium in pinewood (*Pinus silvestris*). Wood samples normally attacked by the fungus and others which had been artificially infected were investigated under the electron microscope. The hyphae were found to grow in the lumina of the longitudinal tracheids, generally without the visible alteration of the cell wall. On their passage from tracheid to tracheid, the hyphae do not grow through the system of fibrils surrounding the tori, but penetrate the torus directly, breaking it mechanically. There are no indications of an enzymatic breakdown. When the middle lamella is split, hyphae have been occasionally observed in this layer; however, it has not yet been established whether this represents genuine growth or a later spreading over the surface after the wood had been cut. The former would be theoretically possible because the pecto-polyuronides present in this area offer a readily accessible food for the mycelium. The significance of these observations for the wood-preservation techniques is discussed. 11 electron micrographs and 22 references. E.S.

ROULET, M. A. The utilization of monosaccharides, polysaccharides, and lignin substances by a strain of cellulolytic microorganism. Experientia 9, no. 12: 460-1 (December, 1953). [In French; English summary]

The author isolated from soil a strain of a fungus which is able to live on media containing monosaccharides, polysaccharides, cellulose, and lignin. The mechanism of cellulose degradation by the active cellulase (postulated to be secreted by the organism) is being studied. 2 figures and 2 references. E.S.

HEMLOCK

FOSTER, R. E., CRAIG, H. M., and WALLIS, G. W. Studies in forest pathology. XII. Decay of western hemlock in the Upper Columbia region, British Columbia. Can. J. Botany 32, no. 1: 145-71 + 2 plates (January, 1954); *cf.* B.I.P.C. 22: 333.

An investigation of western hemlock (*Tsuga heterophylla* [Raf.] Sarg.) in the Upper Columbia region has shown that decay losses are excessive, amounting to 52 and 74% in terms of cubic and board foot computations respectively. The logs of 833 hemlock on 36 sample plots located in mature timber were analyzed in detail; 26 decay-producing fungi have been isolated, and 62% of the total decay was attributed to *Echinodontium tinctorium* Ell. & Ever. and 25% to *Fomes pini* (Thore) Lloyd. Considerable variation in the fungi responsible for decay was encountered intraregionally. Stand defect losses varied from 38 to 71%. Some of this variation could be predicted on the basis of site-index determinations of hemlock. Relative to the total incidence and importance of decay, *Echinodontium tinctorium* decreased and *Fomes pini* increased in significance with increasing site quality. Decay increased progressively with increasing diameter and decreasing site quality. Immature hemlock was found to be susceptible to appreciable decay, and mature stands reached an advanced stage of deterioration at 250 years. Multiple-correlation analyses between percentage of decay, site, age, and the relative percentage of residual trees (no visible defect) weighted by volume permitted an estimate of total stand defect within ± 7%. 13 tables, 14 figures, and 20 references. E.S.

INORGANIC PAPER

BROOKS, D. Paper from ceramic fibres. Indian Pulp and Paper 8, no. 6: 302-6 (December, 1953); *cf.* B.I.P.C. 23: 22.

The preparation of Fiberfrax (I), an aluminum silicate fiber-bearing product, and the characteristics of a paper made from the fine fibers of the bulk of (I) are described. The addition of a bentonite filler and the use of different synthetic resin varnishes to improve its mechanical and electrical properties for use in plastic laminates and magnet-wire-covering applications are described. However, (I) requires further development before it can be commercially exploited. 6 tables. E.S.

INSTRUMENTATION

WALTER, LEO. Flowrators in pulp and paper mills. Indian Pulp and Paper 8, no. 4: 215-19 (October, 1953).

Applications of flow-rate meters to acid and alkaline pulping, bleaching, and to the measurement, control, and proportioning of slush stock are outlined. 3 diagrams and 3 references. E.S.

JUTE

MAZUMDAR, A. K., and SARKAR, P. B. Association of xylan with α-cellulose in jute. Nature 172, no. 4388: 1047-8 (Dec. 5, 1953).

The finding of Das, Mitra, and Wareham (*cf.* B.I.P.C. 23: 638) that the α-cellulose of jute gave rise to xylose and arabinose when hydrolyzed with formic acid was not substantiated by the present authors. However, an unidentified "sugar spot" below that given by xylose was obtained on their paper chromatogram. This spot was not present when sulfuric, instead of formic, acid was used in the hydrolysis. 1 illustration and 2 references. L.E.W.

LABORATORIES

FRANK, KARL. Paper testing in wholesale merchandising. Allgem. Papier-Rundschau no. 23: 977-81 (Dec. 5, 1953). [In German]

The following essential instruments are recommended for the paper merchant: paper scales, micrometer, reading glass, smoothness tester, Mullen tester, electric ashing apparatus, absorption tester, size tester, and ink-feathering tester. In addition, the availability of instruments for the measurement of whiteness, breaking length, initial tear, air permeability, waterproofness, stiffness, and dimensional stability is considered desirable. The arrangement of the instruments in a central location of the merchant's premises and the required personnel for servicing them are outlined. 4 illustrations and 4 footnotes. E.S.

LIGNIN

FREUDENBERG, KARL, and MÜLLER, HEINZ G. Synthetic experiments in connection with lignin. Ann. Chem., Justus Liebigs 584, no. 1: 40-53 (Dec. 11, 1953). [In German]

β-Phenoxycinnamyl alcohol, α-phenylglycerol-β-phenyl ether (I), β-(2-methoxy-4-methyl-phenoxy)-3,4-dimethoxycinnamyl alcohol, β-(2-methoxy-4-methyl-phenoxy)-coniferyl alcohol (II), its dihydro derivative (III), and β-[2-methoxy-4-(γ-hydroxypropenyl)-phenoxy]-coniferyl alcohol and its tet-

rahydro derivative have been synthesized. (II) and (III) were treated with mushroom redoxase and gave dehydrogenation polymers (IV) which differ from their starting materials by their decreased solubility and their lower hydrogen content. On distillation with 28% sulfuric acid (I) gave 1.3% formaldehyde, whereas all the other compounds including the (IV) gave only traces of formaldehyde. 19 footnotes. F.E.B.

KONKIN, A. A., and ROGOVIN, Z. A. Delignification of wood with ethylene glycol. Bumazh. Prom. 28, no. 9: 15-19 (September, 1953). [In Russian]

For abstract *cf.* C.A. 48, no. 1: 360-1 (Jan. 10, 1954). 6 tables, 1 diagram, and 7 references. E.S.

MACHINERY—CUTTERS

COLEMAN, AL. Good paper cutting. Graphic Arts Monthly 26, no. 2: 172, 174 (February, 1954); *cf.* B.I.P.C. 24: 369.

Four important factors in good paper cutting are the machine, knife, operator, and grinder; the latter is emphasized. The average 5-inch knife should be able to withstand grinding 100 times, or last approximately two years. R.A.S.

HERMAN, NICHOLAS. The day-to-day care of paper cutters. Natl. Lithographer 61, no. 2: 30-2 (February, 1954).

Preventive maintenance in the care of paper-cutting machinery is discussed, including cleaning and proper and periodic lubrication and inspection of functioning parts. Excessive oiling must be avoided; the recommendations of the manufacturer with regard to type of lubricant should be carefully followed. The proper care and handling of the knives is particularly stressed. R.A.S.

MACHINERY—SAVE-ALLS

ANON. Backwater clarification: the Sveen-Pedersen system. Indian Pulp and Paper 8, no. 4: 221-2 (October, 1953).

The installation, operation, and advantages of a Sveen-Pedersen flotation save-all are described. 1 figure. E.S.

MACHINERY—SAWS

KERR, LLOYD G. The power saw as an accident hazard. Pulp Paper Mag. Can. 55, no. 1: 116-18 (January, 1954).

Directions are given for the safe handling of mechanical saws in the preparation of the saw for use; transportation; storage of the saw, gas, and oil at the camp; carrying to and from the woods; and starting, working with, and repairing the saw. R.A.S.

NYLIN, E. Design of the Orsia saw blade. Pulp Paper Mag. Can. 55, no. 1: 138-9 (January, 1954).

The arrangement of the teeth on the Orsia saw blade, groups of five teeth in arithmetic series with a total length of 1⅝ inches per group, is still considered most satisfactory for a variety of wood conditions. R.A.S.

MACHINERY—SCREENS

ALMIN, KARL ERIK, and STEENBERG, BÖRJE. The capacity problem in single series screen cascades; theory of screening II. Svensk

Papperstidn. 57, no. 2: 37-40 (Jan. 31, 1954). [In English; Swedish and German summaries] *cf.* B.I.P.C. 24: 285.

A fundamental (mathematical) treatment for a system of the above type gave the following results: Capacity is strongly dependent on the number of stages and the way in which they are connected; the composition of the rejects depends on the number of stages and the position of the stock inlet. In general, calculations can be made which will indicate how the capacity of simple and complicated screening systems should be controlled. 4 figures and 2 references. D.H.

MACHINERY—SPREADERS

G. DURRANT AND SONS LTD., *Stockport, Cheshire, England.* A remedy for wrinkles in paper. World's Paper Trade Rev. 141, no. 1: 34 (Jan. 7, 1954).

The Durrant paper expander units are recommended for paper mills experiencing trouble with wrinkles and creases in paper. Originally developed for the textile trade, the units made in various sizes to suit the width of different paper machines are also giving satisfaction in the paper industry. 1 illustration. E.S.

MACHINERY—VALVES

WALTER, LEO. Preventive maintenance of steam valves in pipelines. Can. Pulp Paper Ind. 7, no. 2: 8-11 (February, 1954).

Directions for the correct installation, maintenance, and repair of different types of valves, the introduction of a maintenance program, and the scheduling of a maintenance procedure are given. 5 illustrations and 8 references. E.S.

MACHINERY—WIRES

BERGSTRÖM, J., and KNELL, H. The resistance to flow of water by the wires of paper machines. Svensk Papperstidn. 57, no. 1: 1-8 (Jan. 15, 1954). [In German; Swedish and English summaries]

The resistance to flow of water by paper-machine wires of different types has been determined at low pressure differentials. The wires were placed between two flanges in a horizontal pipe of 50 mm. diameter. The pressure differential was adjusted by means of constant-level overflow boxes and measured by an inclined differential manometer with taps close to each side of the wire. For volume rates of flow up to 100 liters/second/sq. m. of screen surface, the head loss was a quadratic function of the volume rate of flow. The authors express the coefficients of the quadratic expression in terms of the number of warp and chute wires/unit length of screen and the percentage of the superficial surface of the screen comprised of openings. 3 tables, 12 figures, and 3 references. G.R.S.

PATON, A. W. Machine wire maintenance. World's Paper Trade Rev. 141, no. 3: 198, 200, 205-6 (Jan. 21, 1954).

Two types of weave are commonly used today in making machine wires—plain and twill (longcrimp). It is shown that the twill weave gives less wear and, therefore, longer life. Wire used in manufacturing machine wires needs to have adequate tenacity, ductility, and resistance to abrasion, fatigue, and corrosion. Of the several alloys tried, brasses and bronzes are the most satisfactory. The factors involved in the design of machine wires and the causes of their wear are discussed. Methods of wire repair are outlined. 3 figures. E.S.

MAGNETS

YRJÖNEN, E. Observations on the effect of and measures to detect foreign metal bodies in logs and sawmill waste. Paper and Timber (Finland) 36, no. 1: 11-14 (January, 1954). [In Finnish; English summary]

Tramp metal in wood causes frequent damage to woodroom machinery, chippers in particular, with ensuing interruptions of operations. An electromagnetic metal detector built by Valtion Sähköpaja and installed underneath a conveyor belt at the mill of Oulu Osakehtiö is described. The device has given satisfactory performance and resulted in a considerable reduction of work stoppages. 1 table and 3 illustrations. E.S.

MATERIALS HANDLING

ANON. Eliminate 3-o'clock bottleneck. Paper Trade J. 138, no. 7: 20 (Feb. 12, 1954).

The three-line airtube system installed between the order department and the shipping and finishing departments and the stock house at W. C. Hamilton & Sons, Miquon, Pa. for fast delivery and customer service is described; previous three- or four-minute messenger trips are thereby cut to 24-second tube trips. 1 illustration. R.A.S.

ANON. How wood is handled at the St. Regis Jacksonville mill. Paper Trade J. 138, no. 7: 18-20 (Feb. 12, 1954); *cf.* B.I.P.C. 24: 296.

The information presented on wood operations at the Jacksonville mill of St. Regis Paper Co. is similar to that in the previous reference. 4 illustrations. R.A.S.

HUDSON, WILBUR G. Motorized industrial truck applications. Paper Ind. 35, no. 11: 1218-19 (February, 1954).

The author discusses developments in the use of industrial trucks, including two-way radio equipment which improves efficiency of operation and a catalytic apparatus for gas-driven trucks which converts carbon monoxide to carbon dioxide. 6 figures. R.A.S.

NEVINS, T. C., JR. Materials handling was the problem. Am. BOXMAKER 43, no. 2: 11-13, 36-7, 40 (February, 1954); Paper, Film and Foil Converter 28, no. 3: 17-21 (March, 1954).

Costs of materials handling were considered in the planning of the Clifton, N.J. plant of The Nevins Co. Basing the plans for the machinery placement of the converting plant on minimum travel distance between operations, elimination of manual handling, largest practical unit loads, and optimum utilization of storage areas, a U-shaped production line was designed, with storage areas blocked off along one wall of the square building and aisles sufficiently wide for fork-lift trucks. 4 illustrations and 1 floor plan showing production flow. R.A.S.

SPRINGATE, N. Maintenance of fork-lift trucks. Can. Pulp Paper Ind. 7, no. 2: 16, 18, 25 (February, 1954).

The author discusses the essential factors in the care and maintenance of fork trucks, including the suitability of the building for this type of equipment, particularly floor conditions and their carrying capacity, selection of the

correct size and type of equipment and of a good all-around mechanic, selection of a conveniently located site for servicing facilities, training of efficient operators, and a record system which will insure periodic checks and provide equipment history. E.S.

STOESS, H. A., JR. Economics of handling mill supply chemicals. Tappi 37, no. 2: 57-61 (February, 1954).

This is a report of a special subcommittee of the Materials Handling Committee. Methods and costs of handling mill-supply chemicals are discussed from information received from representative mills. Costs are noted as well as operating advantages and disadvantages. Chemicals mostly used by the industry (alum, clay, pebble lime, hot lime, limestone, dewatered lime mud, rosin size, salt cake, soda ash, sodium sulfite, starch, sulfur, and titanium dioxide) are individually discussed. The methods of receipt and handling are included; types of storage for the chemicals in use are also given. 3 figures. E.S.

METERS AND RECORDERS

EHEMANN, G. C., and BERGER, R. C. Paper tension regulators. Tappi 37, no. 2: 49-55 (February, 1954).

Feed-back control systems in use for regulating the tension in a moving web of paper have been examined for fundamental principles. These systems are shown to comprise various combinations of methods of measurement, comparison, and correction. A number of methods of measurement are described schematically. Several examples of complete tension regulating systems are given. 22 figures. E.S.

MICROBIOLOGICAL TESTING

MARSH, P. B., BOLLENBACHER, K., BUTLER, M. L., and MEROLA, G. V. The relative responsiveness of certain properties of cotton fiber to microbial action. Textile Research J. 24, no. 1: 31-8 (January, 1954).

In continuation of an inquiry into the effect of microbial action and weathering on cotton fiber, experiments have been carried out to determine the relative responsiveness of certain fiber properties to the growth of fungi. Raw cotton fiber and unbleached cotton fabric were inoculated and incubated for varying periods up to 28 days in a water-vapor-saturated atmosphere with each of three common fungi under pure-culture conditions, and various properties of the fiber and fabric were measured subsequently. In general, the aqueous-extract pH and the reducing-substance content of the incubated samples changed quickly and substantially, the former increasing and the latter decreasing. Degree of swelling in 18% sodium hydroxide and Congo red values changed little during the first few days of incubation, but later increased progressively. Strength, as measured on fiber by the use of a Pressley breaker equipped with 1-mm.-gap jaws or on fabric by the 3-inch ravelled-strip method on a Scott tester, showed little or no decrease. Length, determined by the Suter-Webb sorter method, decreased moderately with one of the fungi, but little if at all with the other two. Wax content decreased, but only moderately. *Cladosporium*-incubated fiber became measurably and visibly darker. Absorption of the direct dye Chlorantine fast green by fiber incubated with *Cladosporium* and mercerized before dyeing increased markedly with increasing periods of incubation. Incubation at 95% R.H. greatly slowed down the rate of change in pH and reducing-substance content as compared with results obtained in a saturated atmosphere and prevented change in the alkali-swelling response. 5 tables, 2 figures, and 15 references. E.S.

MILL CONSTRUCTION

DICKENS, G. L. R. Modern building methods as applied to paper mill construction. World's Paper Trade Rev. 141, no. 4: 280, 282, 284, 289-92, 294, 296 (Jan. 28, 1954).

A review of mechanized methods in the design and construction of modern paper mills is given under the headings: general considerations, foundations, materials of construction, concrete and steel, concrete building components, and the main building features—roof, walls, doors, floors, ventilation, surface finishes, and services, and treatment of the surrounding areas. 4 illustrations. R.A.S.

MILL CONTROL

ELLIOTT, NORMAN J. Production planning and control. Chapter 2—Production control vs. expediting. Boxboard Containers 72, no. 734: 22-4, 63 (February, 1954); *cf.* B.I.P.C. 24: 458-9.

The expediting system employed in production planning is described as a listing of orders as received, scheduling to be done at a "promised" date, checking of work progression, and a rush notice if the order appears to be falling behind the delivery date. This system is compared with the production control system (discussed in the previous reference) and the advantages of the latter are emphasized. 4 production forms. R.A.S.

MILL MANAGEMENT

GARRETT, RAY G. Champion intensifies its training of key men. Pulp & Paper 28, no. 2: 64, 66 (February, 1954).

The program for selecting and training personnel at the Champion Paper & Fibre Co., Hamilton, Ohio is described; emphasis is placed on complete and thorough records on all employees taking part in the company's training program. 4 illustrations. R.A.S.

MIDDELTON, J. BAKER. Selecting, measuring, and developing men. Tappi 37, no. 2: 136-8A (February, 1954).

The author emphasizes the necessity for selecting men with potential for growth and outlines a six-month qualifying period for personnel in order to achieve an efficient man-power organization. R.A.S.

OTIS, BRUCE. What the maintenance men learned in Chicago. Paper Trade J. 138, no. 7: 24, 28, 30 (Feb. 12, 1954).

The round-table discussion of pulp and paper mill maintenance problems at the Fifth National Plant Maintenance & Engineering Conference in Chicago is outlined under the headings: organization, scheduling, worker classifications, work-load fluctuations, preventive maintenance, lubrication, bearings, emergency maintenance, and special problems (belting, corrosion, roll-grinder vibration, suction rolls, carrier ropes, and fork-truck leasing). R.A.S.

SCHWEISHEIMER, W. Are older workers efficient? Paper Ind. 35, no. 11: 1217 (February, 1954).

The author discusses the retirement policies of industry toward the increasing number of American workers over the age of 65. Advantages and disadvantages of older workers are compared; many firms follow a policy of shifting older workers to easier jobs. A policy of evaluating an older worker and considering his choice of retirement, change in position, or remaining in his present position is recommended. R.A.S.

WITHAM, IRVING M. Maintenance procedures in a paper mill. Paper Ind. 35, no. 11: 1220-1 (February, 1954).

Necessary requisites for an effective maintenance program are careful selection of personnel, knowledge of equipment, use of high-quality materials, an adequate supply of spare parts, and co-operation in the department. An outline of the responsibilities of a maintenance department is presented. 3 illustrations. R.A.S.

MOLDED PULP ARTICLES

ANON. Mouldings from fibre-resin preforms. Brit. Plastics 26, no. 295: 453-6 (December, 1953).

The process of preparing a fiber-resin preform for molding at either high or low pressures by Fibre Form, Ltd., Earlsfield, England is outlined. It involves the following four techniques: the preparation of the fibrous pulp (cotton waste, rags, wood pulp, etc. and some fines, either wood flour or mechanical wood) by beating, the incorporation of (principally phenolic) resins either by beater dispersion or impregnation, vacuum or pressure forming (felting), and final processing (drying, molding, and curing). 12 illustrations. E.S.

PACKAGING

ANON. Joint research results in better way to package electric ranges. Packaging Parade 22, no. 253: 42-3, 45 (February, 1954).

A packaging construction of a tube or sleeve of 350-pound test double-wall corrugated board, top and bottom caps of 300-pound, and interior pieces of 200-pound test double-faced (single-wall) corrugated board is used by Hotpoint Co., Chicago for its electric ranges. Packaged ranges can be stacked seven high using no wood other than the base. 9 illustrations. R.A.S.

ANON. Kodak's universal pack. Modern Packaging 27, no. 6: 116-18 (February, 1954); *cf.* B.I.P.C. 22: 838.

A special foil wrap, a lamination of aluminum foil, acetate, and a resinous heat-sealing coating, was found by Eastman Kodak Co., Rochester, N.Y. to be satisfactory for both domestic and tropical film, because of its superior protection against gain or loss of moisture. 7 figures. R.A.S.

HRUSCHKA, HOWARD W., and KAUFMAN, J. Polyethylene for citrus. Modern Packaging 27, no. 6: 135-8, 184 (February, 1954).

Citrus fruits (Florida oranges, grapefruit, and limes, and California lemons) were tested for shelf life, decay, weight loss, appearance, and juice flavor of fruit packaged in perforated and nonperforated polyethylene film, mesh bags, and unwrapped in open chipboard trays. Results of these tests made after three and seven days at 46°F. and 80% R.H., 70° and 80%, and 70° and 50% are presented. Polyethylene was found to be a satisfactory wrapping material for sound citrus fruit, 46° and 80% R.H. were the most favorable holding conditions, and perforation of at least eight holes was beneficial. 4 tables, 3 illustrations, and 3 references. R.A.S.

MODERN PACKAGING. Meat. Modern Packaging 27, no. 6: 98-104, 192, 195 (February, 1954).

The packaging of meat at the packer level is described, with emphasis on the growth of the industry to include almost all varieties of meat. Materials and machinery used in the packaging of sliced bacon, sausages, hams, and frozen meats are discussed. 24 illustrations and 9 references. R.A.S.

RAMSBOTTOM, JOHN M. Meat-packaging criteria. Modern Packaging 27, no. 6: 131-4, 186 (February, 1954).

The author discusses the current trends in packaging meats; the protective characteristics of waxed paper, cellophane, aluminum foil laminated to sulfite paper, saran, Pliofilm, and Visten; and the package requirements of fresh meats, poultry, frozen meats, and cured meats. 2 tables and 4 figures. R.A.S.

TIERNAN, J. J. How a paper wholesaler can help the retailer set up a pre-packaging department. Am. Paper Merchant 51, no. 1: 22-3, 73 (January, 1954).

The general trend of acceptance of prepackaged fruit and vegetables is discussed; ways in which prepackaging aids the retailer in selling and practices and ideas which the paper distributor should follow in setting up a successful program are listed. 2 illustrations. R.A.S.

PALMYRA PALMS

ANON. Palmyra stalk pulp for paper making. Indian Pulp and Paper 8, no. 5: 265-6 (November, 1953).

The possibilities of palmyra stalks for papermaking in several districts of India are emphasized. E.S.

PAPER—COATED

AUDINO, H. Varnishing by roll coating. Modern Lithography 21, no. 12: 39-42 (December, 1953); 22, no. 1: 37-41, 109, 111; no. 2: 40-2, 115 (January, February, 1954).

Following a historical introduction on varnishing, the author discusses in the first article materials used in the varnishing of printed paper sheets (including only those materials which form true solutions in organic solvents, i.e., organic solvents, resins, plasticizers, and modifiers); in the second the basic principles of application and roll-coating equipment, particularly the Chambers and Christensen machines; and in the third, the drying, curing, fusing, and blushing of paper coatings, as well as necessary precautions, since varnishing is essentially a hazardous operation. 7 figures. E.S.

HAGEN, GUSTAV. Machinery for coating papers with plastics. Allgem. Papier-Rundschau no. 23: 982-4; no. 24: 1012-14, 1016 (Dec. 5, 21, 1953). [In German]

The author describes the principles of different coating methods (roll, brush, knife, airbrush, dip, cast, spray, extrusion, etc. coating), supplemented by diagrams. The method of drying on highly polished chromium-plated cylinders (Krome-Kote) is also mentioned. 20 diagrams. E.S.

PAPER—CONVERSION

DAISH, A. N. Are you enterprising with paper? Indian Print & Paper 19, no. 2: 15 (October, 1953).

The author shows six ways of folding paper for programs for achieving variety in printing results without causing higher expenses for the customer. 6 diagrams. E.S.

STOAKES, HAROLD R. Planned production features Orgler Enve-

lope plant. Paper, Film and Foil Converter 28, no. 2: 17-20 (February, 1954).

The straight-line flow of production at the Orgler Envelope Co., Inc. converting plant in Brooklyn is described. 6 illustrations and 1 floor plan showing production flow. R.A.S.

PAPER—MERCHANDISING

MCCARTHY, CHARLES H. The department store offers a profitable market for the paper wholesaler. Am. Paper Merchant 51, no. 1: 26, 69 (January, 1954).

The author suggests ways in which a paper wholesaler can obtain department-store business and illustrates some points in the sale of paper napkins. R.A.S.

PAPER—PHYSICAL PROPERTIES

BUREAU, WILLIAM H. Paper properties as related to printability. Parts I-IV. Printing Equip. Engr. 83, no. 12: 66-7, 73 (September, 1953); 84, no. 1: 39, 67; no. 4: 30-2; no. 5: 46-8 (October, 1953, January, February, 1954).

Printability in terms of paper involves a combination of the following basic properties: degree of ink receptivity; resiliency and compressibility, i.e., cushion; degree of surface smoothness; degree of optical contrast between ink and paper; and a miscellaneous group, including surface strength, opacity, dimensional stability, etc. In the first part of the article, the author discusses the factors influencing ink receptivity in coated and uncoated papers; the second deals with compressibility and resiliency of different papers and the requirements of cushion by different printing processes. In the third article, smoothness of uncoated and coated papers in letterpress, rotogravure, and offset printing is considered. The fourth article deals with opacity of paper, including the physics of light as it falls on a sheet, the reasons why papers differ in opacity, and means at the disposal of the manufacturer for increasing opacity (i.e., the use of fillers). Throughout the articles it is emphasized that the paper manufacturer cannot produce a sheet with only one desirable property in mind to the exclusion of everything else, but that he must compromise to arrive at the correct balance of requirements. 1 table and 10 figures. E.S.

PAPER AND PULP INDUSTRY

DOBROW, MORRIS C. 1953 paper production at a new high. Paper Trade J. 138, no. 9: 72, 74, 76, 78 (Feb. 26, 1954); *cf.* B.I.P.C. 23: 495.

Production of paper and paperboard in 1953 established a new high record of 26,566,000 tons, 9% higher than that of 1952 and 2% higher than 1951, the previous record year. A decline is anticipated for 1954, but only to a slight degree; business will be bolstered by defense expenditures, new plant and equipment, and construction expenditures. Wood-pulp production in 1953 was estimated at 19,706,000 tons, of which 17,525,000 was produced in the U. S., 2,157,000 was imported, and 24,000 withdrawn from inventory. The paper and board production was operating at 93% of capacity; the pulp operating ratio was 89%. Preliminary figures for 1953 on production by grades of paper and board show more than half, 13,862,000 tons, for paperboard and building board; of the papers, 3,833,000 was for wrapping and special industrial papers, 1,630,000 for uncoated book paper, 1,488,000 for tissue paper, and 1,065,000 for newsprint. 8 tables. R.A.S.

FOWLER, R. M. Pulp and paper industry moved ahead again in 1953. Pulp Paper Mag. Can. 55, no. 1: 83-5 (January, 1954); *cf.* B.I.P.C. 23: 495.

The highlights of the progress of the pulp and paper industry of Canada in 1953 are presented. The over-all output of the mills amounted to 9.4 million tons, about 2% above the 1952 production. Exports of pulp and newsprint increased, whereas those of paperboard and wrapping and fine papers decreased. The total woodpulp production was more than 9 million tons in 1953; newsprint production increased and is predicted to exceed 5.9 million tons in 1954. The general progress made in labor relations, research, and forestry is reviewed. R.A.S.

THE NORWEGIAN PAPER MAKERS' ASSOCIATION, *and others.* The Norwegian paper, pulp, timber and wallboard industries 1953. Norsk Skogind. 8, no. 1: 4-10 (January, 1954). [In Norwegian and English] *cf.* B.I.P.C. 23: 495.

The conditions during 1953 in the Norwegian forest-products industries are reviewed by the different trade associations. Data on production, consumption, prices, exports, and future outlook are given for paper and board, chemical and mechanical pulp, timber, and wallboard. E.S.

SANDWELL, P. R. The industry in western Europe. Pulp Paper Mag. Can. 55, no. 1: 89-90 (January, 1954); Tappi 37, no. 1: 90-2A (January, 1954).

The author summarizes briefly the present situation in the pulp and paper industry of France, Switzerland, Austria, Germany, Finland, Sweden, and Great Britain. R.A.S.

TURNER, JOHN S. Annual review 1953. Pulp Paper Mag. Can. 55, no. 1: 88, 154 (January, 1954).

The author summarizes briefly the principal technical advances in the industry, major expansions and improvements in Canadian mills, and changes in personnel. R.A.S.

PAPER AND PULP MILLS

ANON. Blandin is still photogenic—and modern, too. Pulp & Paper 28, no. 2: 54-6, 58 (February, 1954); *cf.* B.I.P.C. 21: 332.

Additions to the Blandin Paper Co., Grand Rapids, Minn., known for its windowless brick and concrete plants, follow the original architectural plan. Installations have been completed in a new groundwood mill; its 10 pocket-type grinders were collected from the old set-up and arranged facing a common aisle. Air-conditioning, stainless steel or tile-lined ditches and storage chests, Link-Belt conveyors, and clay storage tanks are provided. A wing was added to the main building, the power dam and water power plant were rebuilt, and improvements were made on No. 1 and No. 3 paper machines. 9 illustrations. R.A.S.

ANON. 8 Mill startups on 1954 calendar for South. Pulp & Paper 28, no. 2: 44-5 (February, 1954).

Brief descriptions are given of eight mills which are scheduled to begin production in 1954—National Container, Valdosta, Fla.; Rayonier, Jesup, Ga.; Valentine Pulp & Paper, Lockport, La.; Bowaters Southern, Calhoun, Tenn.; St. Joe Paper, Port St. Joe, Fla.; Buckeye Cellulose, Foley, Fla.;

Rome Kraft Corp., Rome, Ga.; and East Texas Pulp & Paper, Evadale, Tex. 2 illustrations. R.A.S.

ANON. New $28-million mill for Scott at Everett. Paper Mill News 77, no. 9: 8-12 (Feb. 27, 1954); Chem. Eng. News 32, no. 9: 804-5 (March 1, 1954); *cf.* abstract below.

Essentially the same information as in the abstract by Vedder is given. 5 illustrations. E.S.

ANON. Orient's remarkable progress. Indian Pulp and Paper 8, no. 6: 307-10 (December, 1953).

The installations of Orient Paper Mills at Brajrajnagar, Orissa, India are described briefly, with particular reference to the new fourth paper machine imported from Sweden (AB Karlstads Mekaniska Werkstad) and the soda recovery unit. 5 illustrations. E.S.

ANON. To expand, this NCC mill builds up—not out. Pulp & Paper 28, no. 2: 46, 48 (February, 1954).

A production of 420 tons/day at the Jacksonville, Fla. mill of National Container Corp., originally designed for 200 tons/day, is the result of gradual improvement and replacement in the original plant. Recent changes include the installation of three Cowan screens, a Sutherland refiner, and four Hermann Claflin refiners for stock preparation; a second Infilco unit for water treatment; a General Electric amplidyne control for paper-machine speed; and various other control instruments. 5 illustrations. R.A.S.

FJ. M. A brief history of the Tervakoski paper mill. Svensk Papperstidn. 57, no. 2: 53-62 (Jan. 31, 1954). [In Swedish]

A profusely illustrated account of the Finnish paper mill Tervakoski Osakeyhtiö is given; the mill was founded in 1818. The first paper machine imported from England began operations in April, 1853. The mill now houses six paper machines, the last of which was installed in 1948, and produces cigarette paper and other high-grade tissue papers, as well as rag papers and handmade paper. Since the last war, the mill has been forced to use flax-straw in place of linen rags previously imported from Russia for its cigarette and carbon papers. 31 illustrations. E.S.

TURNER, JOHN S. MANDO modernizes on each side of border. Pulp Paper Mag. Can. 55, no. 1: 81-2 (January, 1954); *cf.* B.I.P.C. 24: 382.

A brief description is given of the modernizations in Minnesota & Ontario Paper Co.'s three mills at International Falls, Minn. and Fort Frances and Kenora, Ont. 3 illustrations. R.A.S.

VEDDER, H. E. Fast paper machine gets rolling at Scott's Everett plant. Paper Trade J. 138, no. 9: 48-51 (Feb. 26, 1954).

The new paper mill of Scott Paper Co. at Everett, Wash. stands next door to the 600-ton bleached sulfite mill of the former Soundview Pulp Co. which Scott acquired by merger in 1951. The first of two paper machines has just started to operate on three grades of Scott toilet tissue; alongside No. 1, work is under way on the erection of No. 2 machine, which is expected to be producing grades for napkins, facial tissue, and towels by midsummer. Bleached slush pulp is fed from the sulfite mill to a storage chest outside the stock preparation room; the pulp from this and two additional chests (in which other grades of pulp are stored) is blended and processed through

several refiners, a Curlator, and Selectifiers. The new paper machine is a Beloit Yankee Fourdrinier, 200 inches wide, driven by a 1250 h.p. General Electric drive. Construction details and contemplated future changes are mentioned. 6 illustrations of the mill installations. E.S.

PAPER SPECIALTIES

"A. M. B." Recognising papers. Paper Market: 98-9; 131, 138; 172, 174 (April-June, 1953); 14-15; 42-4; 84, 86; 114-16; 140-1; 174-5 (July-December, 1953); 16-17 (January, 1954).

This series of articles has been written to help the beginner in the printing trade to become acquainted with the range of papers and boards available, to be able to differentiate between various grades, and to recognize their possible uses. The following types of paper and boards, as well as their most suitable applications, are covered: newsprint, mechanical printing, supercalendered, woodfree, machine-finish, imitation art, cartridge, antique, poster, machine-glazed, wood-body art, and machine and off-machine coated papers, esparto qualities, different classes of writing papers, boards, wrappings (kraft, tissue, cellophane, and greaseproof, vegetable parchment, glassine, and metal papers), and hand- and moldmade papers. E.S.

ANON. Better than you think! Paper Sales 14, no. 2: 14-15, 58-61 (February, 1954); *cf.* B.I.P.C. 24: 301.

This article gives essentially the same information on the sales possibilities in frozen-food locker plants as the previous reference. 1 table, 1 map, and 4 illustrations. R.A.S.

ANON. Disposable paper caps. Paper Sales 14, no. 2: 25, 62 (February, 1954); Paper, Film and Foil Converter 28, no. 2: 65 (February, 1954).

Paper caps represent a possible sales item to retail food outlets, producers of food products, and factories and industrial plants. The majority of these caps are in the style of the army service cap. The second reference describes in detail the cap developed by the Du Pont Company, a heavy, crepe-textured kraft paper treated with neoprene synthetic rubber and sewed like a regular cloth cap with a visor. 2 illustrations in the first and 1 illustration in the second reference. R.A.S.

ANON. Graph papers and their application. Allgem. Papier-Rundschau no. 22: 949 (Nov. 20, 1953). [In German]

A review of modern graph papers is presented, including applications in metallurgy, meteorology, mathematics, statistics, spectrum analysis, etc. E.S.

ANON. How paper containers help hotels. Paper & Twine J. 27, no. 11: 13, 22 (January, 1954).

Liquid-tight paper containers are used by the Pocono Manor Inn in Pennsylvania for quick freezing fresh fruits and vegetables in season, prepared foods ready for cooking, and precooked foods ready for efficient service in rush periods. 1 illustration. R.A.S.

ANON. Mind your customer's business. Paper Sales 14, no. 2: 22-4, 56, 58 (February, 1954).

The sales possibilities in paper products for the take-home food service departments of restaurants and delicatessen stores are pointed out. 6 illustrations. R.A.S.

ANON. Now they're paper-wrapping logging slash. Am. Forests 60, no. 2: 53 (February, 1954).

Crown Zellerbach foresters are experimenting with a new technique in slash burning in the Douglas-fir region of Oregon and Washington. By covering some of the slash with creosoted building paper to keep it dry during heavy rains, the protected piles can be set afire whenever the weather is right (i.e., after heavy rains); the material burns readily and later ignites the wet uncovered slash. The paper withstood even the winter's rains without going to pieces and kept the slash dry. 1 illustration. E.S.

ANON. What you need to know about frozen food packaging materials. Paper Sales 14, no. 2: 16-19, 61-2 (February, 1954).

The features, specialized uses, and other related information on frozen-food packaging are given for cartons and containers, wrapping papers (waxed, laminated, transparent films, and aluminum foil), bags (polyethylene, Pliofilm, and cellophane), and tapes (transparent acetate fiber, and creped-paper backed packaging tapes). 23 illustrations. R.A.S.

CROCKER, DOUGLAS A. Paper merchants seen 'missing the boat' on industrial towels. Paper & Paper Products 95, no. 15: 1, 10-12 (Feb. 5, 1954); *cf.* B.I.P.C. 24: 462.

The beginnings in the use of paper towels are discussed, and data are presented on the number of tons produced yearly from 1925 (155,754) to 1952 (275,460) and on the percentage of towels in industrial and household use. In 1952, 73% was used in industry. Household use is increasing; this potential and others for extending the field for paper towels are emphasized. 2 tables and 1 illustration. R.A.S.

DAY, FREDERICK T. Cover papers for catalogues and booklets. Paper Market: 6-7, 26 (January, 1954); *cf.* B.I.P.C. 23: 740.

Essentially the same information as given in the previous reference is covered. 1 illustration. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 56 (Parts 1 and 2). The manufacture and use of impregnated papers. World's Paper Trade Rev. 140, no. 25: 1898-9 (Dec. 17, 1953); 141, no. 2: 116-17 (Jan. 14, 1954); *cf.* B.I.P.C. 24: 383-4.

The author discusses the various types of paper produced by impregnation, including special packaging papers, synthetic-resin papers, Bakelite papers, oiled manilas, fumigating papers, moth-fumigated papers, disinfectant papers, litmus paper, perfumed papers and boards, and carbolic papers. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 57. The manufacture and use of photographic albums etc. World's Paper Trade Rev. 141, no. 6: 450-1 (Feb. 11, 1954).

Following a brief review of the history and usage of albums, the materials used for pages and covers, finishing processes for cover material, and album accessories are discussed. 1 illustration. R.A.S.

DESHPANDE, P. R. Fruit-wrap paper: its manufacture and possible uses in Indian fruit industry. Indian Pulp and Paper 8, no. 4: 212-13 (October, 1953).

To improve sanitary conditions and prevent damage and losses during shipment, the author advocates the use of fruit wrappers (tissue papers with or without chemical treatment, depending on the kind of fruit) for packaging and shipment to distant Indian markets. The satisfactory experience of California fruit growers is listed as an example. E.S.

DUTTA, BIMAL C. Transfer papers. Indian Print & Paper 19, no. 2: 14, 16 (October, 1953).

The author describes the various types of papers still used in India for hand transferring lithographic images without the aid of photography and the methods for preparing them, including: paper used for writing or drawing with litho-writing ink, grained or chalk transfer paper used for drawing with lithographic chalk, copper-plate or steel-plate transfer paper, and miscellaneous transfer papers used for stone, zinc, or aluminum plates (varnish transfer paper, French transfer paper, and ever-damp transfer paper). The compositions of three different transfer inks are also given. E.S.

F. Z. Papers which are not readily flammable. Allgem. Papier-Rundschau no. 23: 986 (Dec. 5, 1953). [In German]

Actually fireproof or incombustible papers do not exist. Fire-resisting papers may be prepared from furnishes containing asbestos fibers, or the flammability of papers may be retarded by chemical treatment (impregnation with ammonium phosphate, sodium molybdate, tungstates, zinc chloride, and curd-soap solution, etc.). Such papers will char but will not burn with a flame. E.S.

HALL, J. A. Paper and wood—a new team. Paper Ind. 35, no. 11: 1209-12 (February, 1954).

Experiments with resin-impregnated paper overlays at the U. S. Forest Products Laboratory are described. Since less than 25% of the softwood veneer manufactured today is of high grade, the paper overlay facilitates the use of otherwise unusable grades for lumber. The resin-impregnated overlays can be made to provide a high-density surface or an excellent paint base, mask structural defects, and show high abrasion resistance. The development of suitable papers and resins for masking or high-density overlays, paint-base overlays, and veneer facings on door panels, boxes, or honeycomb structures is reviewed. The strength, wear resistance, waterproofness, and tests for the quality of overlays are discussed briefly. 4 illustrations. R.A.S.

JAHODA, EDWARD. H. P. Andrews. Tappi 37, no. 2: 103-6A (February, 1954).

From the booklet "Reproduction paper coating," published by the H. P. Andrews Paper Co., New York, sections on chemicals for light-sensitive coating solutions, precoating, wrapping of sensitized papers, and the bibliography (238 references to U. S. patents, 16 to government (PB) reports, and 1 to a periodical) are reprinted. 2 tables and 1 diagram. E.S.

KAZMEIER, A. W. Where is the largest sheet of handmade paper kept. Allgem. Papier-Rundschau no. 22: 944-5 (Nov. 20, 1953). [In German]

The Gutenberg Museum in Mainz received as a gift a sheet of handmade paper, 5 × 5 m. in size, which had been "cast" in Japan in 1926 from a furnish consisting of 20% kozo, 30% gampi, and 50% hemp. The special techniques required for its manufacture are outlined. Three men were needed to carry the finished sheet rolled like a carpet. A special cabinet with roller arrangement had to be built at the museum to house and exhibit the huge specimen. 3 illustrations. E.S.

LATHAM, CHARLES W. Problems of offset paper in the press room. Am. Printer 135, no. 2: 24-5, 62, 65, 68 (February, 1954).

The essential requirements of an offset paper are that it should be resistant to distortion, stretch, shrink, and curl; it should have high pick resistance, well-bonded surface fibers, good ink-receptive and -drying qualities, and be opaque, extremely white, and have a good printing surface. All these characteristics cannot be combined in any one paper at the present time. A paper with good formation, high pick resistance, and perfect surface for printing and drying often lacks maximum resistance to stretch, shrink, and curl, so that lithographers must continue to operate with a generally good compromise. Most troubles with paper come from lack of knowledge in handling it or trying to short cut the attention it requires for trouble-free operation. The author discusses the importance of specifying a straight gripper edge, the required pH of the coating, reasonably good picking characteristics, and the desired moisture content and outlines simple tests for determining the manufacturer's compliance with specifications. He emphasizes the need for checking each shipment of paper as soon as received and for following up on its performance to find out if it behaves satisfactorily. Care taken in ordering and checking paper will save pressroom time and trouble; the sooner mistakes are found, the easier it will be to correct them. E.S.

SOLECHNIK, N. YA., and NATKINA, L. N. The influence of wet pressing on the properties of impregnation papers. Bumazh. Prom. 28, no. 4: 11-15 (April, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 14: 7213-4 (July 25, 1953). 3 tables and 4 diagrams. E.S.

PAPER STORING

GAINER, W. KEITH. The handling and storage of paper. Natl. Lithographer 61, no. 2: 34-5 (February, 1954).

Directions for the elimination of unnecessary waste in printing plants include exactness in ordering (size, machine direction, basis weight, caliper, color and, particularly, moisture content); consideration of appropriate packing, loading, handling, and storage; and education of paper handlers and pressmen of the value of the commodity. R.A.S.

PATENTS

THE INSTITUTE OF PAPER CHEMISTRY. United States patents on papermaking, third quarter, 1953. Tappi 37, no. 2: 156-62A (February, 1954); *cf.* B.I.P.C. 24: 303.

An annotated list of U. S. patents on papermaking for the third quarter of 1953 is presented. R.A.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

APPEL, WILLIAM D. Tests for colorfastness of textiles under consideration in the International Organization for Standardization. Am. Dyestuff Reptr. 42, no. 26: P871-87 (Dec. 21, 1953).

The tests for colorfastness of textiles, the result of co-operative work in ISO during the past five years, now under consideration in the 33 countries represented on ISO Technical Committee 38 on Textiles are presented for information and comment. They do not cover at present all the agents for which fastness tests are required; however, work on some of these is in progress. The present standards cover the gray scale for evaluating change in color. 14 tables, 2 figures, and 2 references. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

LINDE, F. Measuring the moisture content of running paper webs. Allgem. Papier-Rundschau no. 21: 900-4 (Nov. 5, 1953). [In German]

The author discusses the application and limitations of different methods for the continuous measurement of the moisture content of a traveling web as it emerges from the dry end of the paper machine; included are procedures based on the measurement of the conductivity of the web, its dielectric constants, and of the moisture of the air immediately above the paper web. In conclusion, a brief reference is made to the continuous measurement of the basis weight of a running web by radioactive rays. 4 diagrams. E.S.

PHYSICAL TESTING—PAPER—THICKNESS

WALTER, L. Thickness measurement by using alpha and beta rays. Indian Pulp and Paper 8, no. 6: 298-301 (December, 1953).

British, U. S., and Canadian isotope instruments for the thickness measurement of paper and board are described. 1 illustration and 2 references. E.S.

PHYSICAL TESTING—PULP—MOISTURE

VEREIN DER ZELLSTOFF- UND PAPIER-CHEMIKER UND -INGENIEURE. *Fachausschuss für Faserstoffanalysen.* Determination and checking of the dry content and weight of pulp in dry bales. Merkblatt IV/31, accepted standard method. 3 p. (Feb. 1, 1953). [In German]

The procedures employed in case of differences between supplier and consignee for controlling the moisture content of pulp shipments by truck, rail, or boat are discussed. The permissible tolerance of the ovendry weight is ± 1%; at least half of the entire shipment must still be available for checking, and the bales must neither have been damaged nor exposed to rain or direct sunlight during storage in the open. The method of sample taking from a sufficient number of bales; weighing, drying to constant weight, and reweighing of the samples while still warm; and determination of the gross weight, dry content (average of the entire shipment), and calculation of ovendry weight from these data and, in shipments to foreign countries, also of the airdry weight are described. An example of checking the dry content of a shipment of 100 bales is included. 1 table and 1 figure. E.S.

PHYSICAL TESTING—PULP—SURFACE AREA

EMERTON, H. W., MATTOCKS, R. E., and BLANCHARD, D. M. W. A direct comparison of the silvering and permeability methods of determining specific external surface. Tappi 37, no. 2: 55-6 (February, 1954).

Since it has been previously determined that the silvering and permeability methods of measuring specific external surface of beaten pulps measure very different surfaces, an experiment was made to compare the two methods directly. The specific surface of some moderately beaten sulfite pulp was determined (1) by the permeability method, (2) by the permeability method after the pulp had been silvered, and (3) by the silvering method (after the pulp had been silvered). The results of (2) and (3) were, roughly speaking, the same and only a fraction of that of (1). It is therefore concluded that the silvering operation, *per se*, reduces the external surface of beaten fibers very considerably. The results were supported by a repetition of the experiment. 2 tables and 4 references. E.S.

PIGMENTS

TAYLOR, L. B. A new paper pigment; Silene EF in paper. Paper Trade J. 138, no. 9: 53-6 (Feb. 26, 1954).

As supplied to the paper trade, Silene EF (trade name of Columbia Southern Chemical Corp.) (I) is a white amorphous powder, a precipitated hydrated calcium silicate of extremely fine particle size; it is alkaline in nature and will react with acids in the paper system to form insoluble products which act as pigments and increase the ash of the paper. The tiny particles have an unusual affinity for cellulose fibers. (I) was found to improve the quality in a number of papers and boards, in most cases with lowered production costs. Typical applications to writing, offset, and book papers, newsprint, and to bleached-lined boxboard and board specialties (embossed or impressed with a pattern) are discussed; the resulting effects are noted. (I) does not affect tear strength at loadings up to 15%; compared with other fillers, it gives higher burst values. Brightness, formation, and smoothness (hence, printability) are improved, and abrasion decreases. Opacity as measured by contrast ratio can be improved in either sized or unsized sheets. The general experience has been that (I) can replace titanium dioxide at normal loadings with a savings of approximately 30%. 2 tables, 1 diagram, and 4 electron micrographs. E.S.

PLASTICS

MODERN PLASTICS. Progress in plastics. Modern Plastics 31, no. 5: 63-80, 167-8, 171 (January, 1954); *cf.* B.I.P.C. 23: 434.

Following a presentation of the over-all picture of the plastics industry in 1953, the progress and trends in use for the following materials are discussed in detail: phenolics, urea and melamine, cellulosics, vinyl chloride, acrylics, nylon, polystyrene, and polyethylene. 8 tables and 7 charts. E.S.

PLASTICS—BIBLIOGRAPHY

KLINE, GORDON M. The year 1953 in review. Modern Plastics 31, no. 5: 117-18, 120, 122, 124, 126, 128, 130, 133, 189-92, 195-6, 198, 201 (January, 1954); *cf.* B.I.P.C. 23: 434.

A literature review of the developments in plastics during 1953 is pre-

sented under the headings: atomic energy, materials, processing, applications, and properties, specifications. 2 tables, 9 figures, and 541 references.
E.S.

PLASTICS—HONEYCOMB

Eo. Developments in paper-honeycomb cores. Allgem. Papier-Rundschau no. 22: 938-41 (Nov. 20, 1953). [In German]

Following a brief introduction on the first applications of the insulating properties of corrugated board in Austria and Germany, a condensed version of Seidel's paper "Paper honeycomb cores for structural sandwich panels" (*cf.* B.I.P.C. 23: 350-1) is presented (*cf.* also Allgem. Papier-Rundschau no. 3: 110-12 [Feb. 12, 1953]). 4 illustrations. E.S.

PLASTICS—PAPER-BASE

HARTMANN, G. B. VON. Laminated plastics as raw material—their applications and conversion. Kunststoffe 43, no. 10: 392-6 (October, 1953). [In German] *cf.* B.I.P.C. 23: 275.

The author discusses decorative applications of laminated plastics, such as wall coverings, table tops, for the manufacture of furniture, etc., with particular reference to conversion techniques and suitable adhesives. 8 illustrations and 6 footnotes. E.S.

ZICKEL, H. Hints for the machining of laminated plastics. Kunststoffe (Kunststoff-Praxis) 43, no. 10: 437-8 (October, 1953). [In German]

Directions for the selection of tools (construction materials and grinding) for the machining of laminated plastics are given; the correct techniques for milling, cutting, drilling, boring, etc. are outlined. In all operations special attention must be paid that the laminated material does not separate into the individual plies. 1 table, 2 figures, and 2 footnotes.
E.S.

PLASTICS—TESTING

YUSTEIN, S. E., WINANS, R. R., and STARK, H. J. Three years' outdoor weather aging of plastics under various climatological conditions. ASTM Bull. no. 196: 29-38; discussion: 38-9 (February, 1954).

The effects of outdoor weather aging under widely different climates were investigated for various types of plastic materials. Five climatological regions were represented in the program which provided for outdoor exposures on sites located in (1) Panama Canal Zone (tropical); (2) New Mexico (dry desert); (3) New York (temperate); (4) Fort Churchill, Canada (subarctic); and (5) Point Barrow, Alaska (arctic). The materials included five types of clear transparent sheet plastics, six types of laminates (including one phenol-formaldehyde paper-base laminate), and five types of molded terminal bars. Various exposure periods from one to 36 months were employed, and various mechanical, electrical, and optical properties were evaluated. On the basis of the extensive data accumulated, it is possible to deduce the occurrence of a wide variety of effects that appear to be related to differences in the climatic and environmental conditions and in the exposure periods. On the whole the ability of most of the materials to withstand the two or three-year weather aging as well as they did was unexpected. 13 tables and 9 figures. E.S.

PRINTING AND PRINTER'S INK

CAVANAGH, J. C. Formulating inks for corrugated cases. Am. Boxmaker 43, no. 2: 14-15 (February, 1954).

The author discusses the formulation, manufacture, and methods of testing inks for printing corrugated board on printer-slotters. Instruments used in the testing are described, particularly the Reed Inkometer. R.A.S.

PRINTING AND PRINTER'S INK—EDUCATION

HARTMAN, FRED J. Apprentice training. Tappi 37, no. 2: 109-11A (February, 1954).

A selected bibliography for apprentice training programs in different departments of the graphic arts is presented. 73 references. E.S.

RAW MATERIALS

MACKENZIE, M. W. Canada's natural resources. Pulp Paper Mag. Can. 55, no. 1: 86-7 (January, 1954).

Renewable and nonrenewable material resources and sources of energy which are abundant in Canada and the opportunities they represent are discussed. The part the government plays by tariff and revenue policies is mentioned. R.A.S.

UNDERHAY, GEORGE F. Raw materials for paper. J. Roy. Soc. Arts 101, no. 4892: 153-72; discussion: 172-4 (Feb. 6, 1953); World's Paper Trade Rev. 138, no. 25: 1900, 1902, 1904 (Dec. 18, 1952). [Abridgment]

Following a brief outline of the papermaking process and the nature of paper and papermaking fibers, the author reviews current trends in raw materials used for the production of paper. Whereas agricultural residues, annual crops, grasses, reeds, etc. are suitable, the greater part of the requirements for expansion are expected to come from other wood sources (by reforestation and pulping of hardwoods). The causes of shortages of wood during wartime and the postwar period are discussed, giving those particularly experienced in the United States, Canada, the Scandinavian countries, New Zealand, and Great Britain. Great Britain is advised to consider the utilization of straw and the afforestation of bare land to provide more of its own raw material. 3 tables, 7 figures, and 13 references in the first and 6 references in the second article. R.A.S.

RAYON—STATISTICS

TEXTILE OR'GANON. Annual review. Textile Or'ganon 24, no. 2: entire issue (February, 1953); 25, no. 2: entire issue (February, 1954); *cf.* B.I.P.C. 22: 520.

The total 1952 U. S. production of rayon and acetate amounted to 1,135,800,000 pounds, a 12% decrease from 1951; production in 1953 reached 1,196,900,000 pounds, 5% over 1952 but still 8% below 1951. World acetate and rayon production is estimated at 3,400,000,000 pounds for 1952, 14% below 1951's record high; that in 1953 is approximated at 4,090,000,000 pounds, which would exceed 1951 by 1.5%. Of the world output in 1952 yarn should account for 1,800,000,000 pounds, a 15% decrease from 1951, and staple 1,600,000,000 pounds, a decline of 13%. The related figures for 1953 are 2,040,000,000 pounds for yarn (11% increase over 1952) and

2,050,000,000 pounds for staple (increases of 17% over 1952 and 7.5% over 1951). Numerous graphs and tables supply additional data on domestic and foreign production. R.A.S.

RAYON—VISCOSE PROCESS

KLEINERT, THEODOR N., and WURM, PHILIPP. Sulfite pulps from beechwood bark and their behavior in the viscose process. Svensk Papperstidn. 57, no. 1: 19-22 (Jan. 15, 1954). [In German]

Beechwood bark (I) was pulped under standard conditions of a sulfite cook, and the composition of the resulting material was investigated. The pulped (I) was mercerized under identical conditions as employed during the commercial viscose process, xanthated with carbon disulfide, and dissolved to a bark viscose containing 7% cellulose and about 5% sodium hydroxide. The cellulose fibers of the bast were completely dissolved during this treatment, whereas the strongly mineralized stone cells resisted sulfite cooking and the viscose process. They can occasionally be detected in the filtration residues of the technical viscose process. Residues of poorly debarked wood may therefore lead to considerable troubles in viscose manufacture, particularly during filtration and spinning. Hence, dissolving pulps should be practically free from bark residues, i.e., either be prepared from carefully barked pulpwood or the pulps should be specially treated in modern highly efficient centrifugal separators (Centri-Cleaner). 3 tables, 4 figures, and 22 references. E.S.

KOSAYA, G. S. The heterogeneity of viscose pulp. Bumazh. Prom. 28, no. 8: 5-9 (August, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 22: 12810 (Nov. 25, 1953). 1 table, 3 diagrams, and 8 references. E.S.

RESEARCH

BAILEY, G. L. The importance of research associations. Indian Pulp and Paper 8, no. 5: 275-6 (November, 1953).

The origin of the British research association movement and its principal objects (provision of scientific information; assistance to those firms in need of help in the application of existing scientific knowledge, particularly small firms; and development of improvements in processes, machinery, and products) are outlined. In 1919 there were 19 associations; their number has grown to 41 in 1953 with an aggregate industrial income of £2,400,000 and government grant of £1,300,000. E.S.

HOOD, NORMAN R. Survey of research progress; paper and board studies at Kenley. World's Paper Trade Rev. 141, no. 3: 164, 166, 168, 171-2, 174, 176, 178; no. 5: 366, 368, 372, 375-6 (Jan. 21, Feb. 4, 1954).

Extracts from the ninth annual report (covering the period October, 1952 to September, 1953) are given, with particular reference to progress made in the different research projects. Detailed results of studies carried out at Kenley are communicated to members in confidential reports; a list of titles of published reports is given in World's Paper Trade Rev. 140, no. 16: 1187-8, 1190 (Oct. 15, 1953). Brief summaries of the following projects are given in the present article: *Physical Chemistry Section*—effluent disposal, removal of suspended solids, reduction of B.O.D., pulp wash-

ing, soda recovery, and pulping; *Physics (A) Section*—mechanism of water removal on Fourdrinier paper machines, instrumentation (including beta ray gages, moisture meters, and cylinder-temperature measurement), and paper testing; *Physics (B) Section*—fundamental research on aspects of beating, the measurement of the specific surface area of fibers, and microscopical methods of studying the surface topography of fibers; and *Chemistry Section*—bleaching, coating, moldproofing, water-vapor resistance of paper and board, chemistry of papermaking fibers, and general analytical work. Technical inquiries, library and information service, and changes on the council are also discussed. E.S.

MAJOR, ROBERT. The activity of the Norwegian Council for Scientific and Industrial Research; a review of 1953. Norsk Skogind. 8, no. 1: 21-5 (January, 1954). [In Norwegian; English summary]

The organization of industrial and scientific research in Norway is described briefly, and the activities of the research council during the fiscal year 1953/54 are reviewed. The council co-ordinates research, stimulates recruitment of scientific personnel, and gives grants for research work. The activities of eight research institutes, erected by and financed through the council, are outlined, including the work of committees appointed by the council. The progress in the establishment of the new industrial research center in Oslo is reported. The total cost of research in Norway is compared with that of England and the United States. Although considerable progress has been made in Norway during recent years, the over-all research capacity of the country must still be appreciably increased through combined efforts of the state, industry, and research institutions. 1 table and 3 figures. E.S.

RESEARCH LABORATORIES

ANON. What independent labs can do that others can't. Pulp & Paper 28, no. 2: 82, 85 (February, 1954).

Examples of problems of the pulp and paper industry handled by an independent laboratory (Foster D. Snell, Inc. in New York) are given (stream pollution, slime control, testing services, by-product development and waste disposal, and product development and evaluation) to illustrate the facilities available to small mills with no research departments or to large organizations to supplement their own research. 4 illustrations. E.S.

CHAMPION, F. J. Research center seeks better use of woods. Ind. Labs. 5, no. 2: 6-10 (February, 1954).

The author outlines the equipment, objectives, and activities of the nine divisions of the Forest Products Laboratory at Madison, Wis. (timber mechanics, timber physics, pulp and paper, wood preservation, derived products, silvicultural relations, industrial investigations, material containers, and forest pathology). 8 illustrations. E.S.

RESIN, SYNTHETIC—IDENTIFICATION

JAYME, GEORG, and BRANSCHEID, FRIEDRICH. A simple color reaction for the identification of wet-strength papers. Das Papier 8, no. 3/4: 43-8 (February, 1954). [In German; English and French summaries]

A simple method for the detection of the presence of urea or melamine resin in paper is described, which can be applied without laboratory or spe-

cial apparatus, gives immediate results, and does not require chemical training. A rather concentrated solution of sulfuric acid in which phenylhydrazine is dissolved (either 1% phenylhydrazine in 40% sulfuric acid or 2% phenylhydrazine in 30% sulfuric acid) is transferred by means of a glass rod to the paper to be tested. After 30 seconds a drop of a 10% ferric chloride solution is added with another glass rod; the use of two different rods for the two reagents is essential. After a few minutes the spot assumes a deep-red color if urea, and a light-red color if melamine is present. When the paper has not received any wet-strength treatment, a yellow color appears. The red colorations do not last any longer than about a day, then turn dark violet, light violet, and finally a grayish yellow. Melamine requires a longer reaction period and gives a lighter shade of red, so that the two resins can be easily differentiated from each other. A comparison of the results obtained by analytical methods with those of the colorimetric test gave a satisfactory agreement. The method is of particular value in the sorting and regeneration of waste paper. 4 tables and 4 references. E.S.

SAFETY

HARGIS, EARL D. What a foreman expects of a safety program. Pulp Paper Mag. Can. 55, no. 1: 164-6 (January, 1954).

In carrying out an effective safety program the foreman must have the backing of top management. Treatment of safety recommendations with the same consideration as production and co-operation between departments are essential. R.A.S.

KARLSSON, KURT K. Three suffocated in a sulfate digester. Svensk Papperstidn. 57, no. 1: 29 (Jan. 15, 1954). [In Swedish]

An unusual accident which claimed the lives of three men is recorded from a Finnish mill. During a general summer-vacation period a number of repairs were carried out, including the removal of deposits in the circulation system of the sulfate digesters. For this purpose, the digesters were partially filled with chips, so that the crew could stand on them and comfortably reach the piping in the upper half of the digesters—a common practice. Several digesters had already been cleaned in this manner, one even on the Monday on which the accident occurred. Since welding operations had been carried out on the preceding Saturday above the fatal digester, the cover had been placed over it to prevent sparks from igniting the chips. Two summer students removed the cover on Monday and climbed down into the digester with the aid of a rope ladder, approximately 3.4 m. from the top. After 10 or 15 minutes a third worker looked into the digester and saw both men lying lifeless on top of the chips. He climbed down to help them and was also overcome. A fourth worker nearly suffered the same fate, but managed to get back into fresh air. With the aid of oxygen masks a rescue crew could finally remove the three victims; however, it was too late to restore them to life. The following investigations showed that in a closed digester after 48 hours practically all oxygen above wood chips had disappeared, whereas 12-16% carbon dioxide was present. No poisonous gases could be detected; the concentration of carbon monoxide was insignificant. Wet spruce or pine chips (from sapwood more than from heartwood) have the capacity to absorb nearly all oxygen from the air in a closed vessel within a few days and give off carbon dioxide by a biological process. In an open digester, sufficient air currents are usually present to render the situation harmless; however, in view of the above accident, the use of a fan under all conditions is strongly recommended. E.S.

SHIPPING CONTAINERS

ANON. Self-partitioning carton. Modern Packaging 27, no. 6: 122-3 (February, 1954).

A description is given of the self-partitioning corrugated shipping container stamped from a single blank, in which extensions of the bottom and side flaps form partitions for 10 cells; it is being used by General Electric Co., Fort Wayne, Ind. for shipping transformers and other electrical equipment. 6 illustrations. R.A.S.

OSE, —. Corrugated board in America and Europe. Allgem. Papier-Rundschau no. 24: 1016-18 (Dec. 21, 1953). [In German]

The author discusses the advances made in the packaging applications of corrugated-board containers in North America and the reasons why European developments are still far behind. He suggests that industry and railroad administrations study the experience gained in other parts of the world and make them rapidly available to the domestic market. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

ANON. 'Heaviest' material ever packaged goes into new multiwall bag. Packaging Parade 22, no. 253: 97, 99 (February, 1954).

Sponge iron powder, density 167 pounds/cu. ft., is now packaged in single 5-ply crepe bags of the flat-sewn tube type with laminated asphalt plies, all plies kiss-pasted. 6 illustrations. R.A.S.

ANON. Paper carries the load. Can. Pulp Paper Ind. 7, no. 2: 20, 25-6 (February, 1954).

St. Regis Paper Co. (Canada) Ltd. and the Consolidated Mining & Smelting Co. of Canada jointly developed a four-ply, polyethylene-lined kraft bag for packaging fertilizer grade of ammonium nitrate, a chemical which absorbs moisture readily. Consignees report that the product arrives in a drier condition and empties better from the bags than before when asphalt-laminated five-ply bags were used. The polyethylene ply remains strong and pliable during cold winters and hot summers. Other satisfactory applications of polyethylene-lined bags include the packaging of peat moss, powdered milk, and meat scraps stored in freezers. 2 illustrations. E.S.

SMALL ORDERS

DRAGONETTI, JOSEPH. How the paper merchants of Philadelphia handle small orders. Am. Paper Merchant 51, no. 1: 20-1 (January, 1954).

A discussion of the problem of handling small orders is presented; the consensus is that no hard and fast rules apply and persuasion is the best way to seek to eliminate orders which constitute a loss for the wholesaler. R.A.S.

SPENT SEMICHEMICAL LIQUOR

HAYWOOD, GERALD. Possible processes for recovering soda and sulphur from semichemical and acid sulphite waste liquors. Tappi 37, no. 2: 134-6A (February, 1954); Paper Mill News 77, no. 12: 78, 80 (March 20, 1954).

The author reviews several possible processes based on the collection, evaporation, and combustion of the waste liquors, including a modified Le Blanc and the Forest Products, Greenawalt, Aries-Pollak, Drewsen,

Bradley and McKeefe, Larsson and Jonsson, Mannbro, Bickel and Tretheway, Rayonier, and Zimmermann processes. These are discussed on the basis of their chemical reactions, with no consideration given to the equipment needed to perform and control the reactions. E.S.

STARCH

BOARDMAN, W. H. Starches and their uses as surface sizing agents in the paper industry. World's Paper Trade Rev. 141, no. 6: 423-4, 426, 429-30 (Feb. 11, 1954).

A review of starches and their uses in the paper industry is presented under the headings: some physical and chemical properties of starches, types of raw starches (corn, potato, tapioca, and rice starches), types of modified or converted starches (thin boiling starches, dextrins, and oxidized starches), tub-sizing, and sizing on the paper machine. 3 tables. R.A.S.

FOSTER, JOSEPH F., and SMITH, RICHARD L. Potentiometric titration of branched starch fractions. Iowa State Coll. J. Sci. 27, no. 4: 467-77 (July, 1953).

A modified Gilbert-Marriott differential titration method (*cf.* B.I.P.C. 18: 789) was employed to study binding of iodine by various branched starch fractions (amylopectins). The method is less precise than the more cumbersome method of Higginbotham (*cf.* B.I.P.C. 20: 666) but the results are in substantial agreement. 6 diagrams and 7 references. J.W.S.

HARSVELDT, A. Starch usage in the paper industry. Norsk Skogind. 8, no. 1: 11-15 (January, 1954). [In English; Norwegian summary]

The author discusses the possibilities and resulting advantages of modified starches in beater sizing, surface sizing (with size tub, size press, or calender), and off-machine and machine coating. 5 figures. E.S.

STATIC ELECTRICITY IN PAPER

ERNEST, EUGENE P. How the GPO controls static. Modern Lithography 22, no. 1: 44-5, 119, 121 (January, 1954).

The author describes the different methods employed at the Government Printing Office for eliminating or counteracting the ill effects of static electricity, including tinsel, gas flames, high-voltage neutralizers, and radioactive eliminators, with particular reference to the hazards involved. Radium has been the only material employed at the GPO; the radium-source eliminators were purchased only after other forms of elimination or neutralization had proved unsatisfactory. Conclusions at present are that it is safe to use a limited number of these units, provided the potential hazard is understood by responsible officials; the eliminators are properly installed; adequate clinical, laboratory, and instrument follow-ups are made; and appropriate rules are set up and enforced. E.S.

STRAINS AND STRESSES

BROUGHTON, GEOFFREY, and WANG, JAMES P. The mechanical properties of paper—Part II. Tappi 37, no. 2: 72-9 (February, 1954); *cf.* B.I.P.C. 22: 282.

Further work on the Instron tensile tester using papers immersed in a variety of organic liquids and water is reported. The shape of the stress-

strain curve and work to rupture are related to the hydrogen-bonding power of the liquid. 8 tables, 9 figures, and 22 references. E.S.

SULFATE MILLS

BROWN, W. W., and MACEY, J. British Columbia pulpmill operates largely by remote control; Howe Sound Pulp Division of Canadian Forest Products Limited benefits from modern instrumentation. Pulp Paper Mag. Can. 55, no. 1: 76-81 (January, 1954); *cf.* B.I.P.C. 24: 316.

A description is given of the operations and equipment of the mill at Port Mellon resulting from an extensive modernization program begun in 1951. The saw mill and chipping plant (located at the Eburne Division of the company in Vancouver), chip handling, digester room, pulp washing, high-density stock storage system, screening, machine room, recovery unit, causticizing equipment, lime kiln, steam and power plant, water supply, and service departments are discussed. The potential productive capacity of the mill is now about 200 tons of dry unbleached kraft pulp per day. 8 illustrations. R.A.S.

HARRIS, K. F. New kraft pulp mill integrated into Weyerhaeuser's operations. Paper Ind. 35, no. 11: 1204-9 (February, 1954); *cf.* B.I.P.C. 24: 483.

This gives essentially the same description of the Everett sulfate mill of the Weyerhaeuser Timber Co. as the previous reference. 1 table and 10 illustrations. R.A.S.

SULFITE MILLS

ANON. How Alaska Pine & Cellulose modernized the Port Alice Mill. Paper Trade J. 138, no. 8: 16-24 (Feb. 19, 1954).

The renovation and extensive modernization of the bleached sulfite dissolving pulp mill of the company's Port Alice Division on Quatsino Sound on Vancouver Island are described. The outstanding feature of the program is the new multistage bleach plant, the operation of which is as completely automatic as possible. The key unit is the 62-foot control panel board attended by a single operator. In addition, a new woodroom with a Bellingham-type hydraulic barker and a 175-inch Sumner chipper, a new pumphouse, hydro unit, and steam power plant with two Combustion Engineering steam-generating units (*cf.* B.I.P.C. 23: 828) were constructed. Details of the principal features are given. 11 illustrations. R.A.S.

SULFITE PROCESS

KOMAROV, A. I., and SOLYUS, N. G. Use of side relief and high-strength acid in the manufacture of viscose cellulose. Bumazh. Prom. 28, no. 8: 9-12 (August, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 22: 12804 (Nov. 25, 1953). 2 tables and 2 diagrams. E.S.

ROZENBERGER, N. A. Chemistry of the sulfite cooking of spruce. Bumazh. Prom. 28, no. 1: 13-19; no. 2: 14-20; no. 3: 14-18 (January-March, 1953). [In Russian]

For abstract *cf.* C.A. 47, no. 15: 7776-7 (Aug. 10, 1953). 3 tables, 16 figures, 18 footnotes, and 6 references. E.S.

SULFITE WASTE LIQUOR

KIN, ZYGMUNT. Obtaining of lignin and vanillin from waste sulphite liquors. Przeglad Papierniczy 9, no. 8: 236-41 (August, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 22: 12806 (Nov. 25, 1953). 3 tables, 1 flow-sheet, and 30 references. E.S.

RESEARCH COUNCIL OF ONTARIO. Ontario Research Council; progress report 1952-1953. Can. Chem. Processing 37, no. 13: 70 (December, 1953).

An outline of the research and investigation projects of the Council contained in their annual report for 1952-53 includes a section on spent sulfite liquor (use of carbohydrates as cattle feed and the preparation of tanning agents, synthetic boards, and dispersing agents) and fundamental research on the chemistry of lignin (chlorination and phenolation of the spent liquor). E.S.

SKALICKA, ANNA. Application of sulphite waste liquors in the construction materials industry. Przeglad Papierniczy 9, no. 5: 142-4 (May, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 19: 10223 (Oct. 10, 1953). 11 references. E.S.

SYNTHETIC FIBERS

BHAT, R. V. Man-made fibres. Indian Pulp and Paper 8, no. 4: 207-11 (October, 1953).

Following a short historical introduction on the development of the first synthetic fibers, the author outlines briefly the preparation, properties, and uses of viscose rayon, cellulose acetate, PeCe fiber, Vinyon, saran, Dynel, Orlon, nylon, Terylene, and Vicara. E.S.

TALL OIL

KAJANNE, PAAVO. Investigations on the chemical composition, isomerization, and autoxidation of the fatty acids of pine wood and tall oil. Paper and Timber (Finland) 36, no. 1: 1-8, 10 (January, 1954). [In Finnish; English summary]

This is an abridgment of the results published in the author's doctoral dissertation presented to the Finland Institute of Technology at Helsingfors. The literature concerning the extractives of *Pinus sylvestris* and tall oil is critically reviewed. The American Oil Chemists' Society and cold saponification methods were tested with regard to their conjugating effect; both result in small amounts of conjugated dienoic absorption. The cold saponification method gives practically no trienoic absorption, and its use is recommended where conjugation must be avoided. It was found that freshly prepared polyene acids can be stored under carbon dioxide at —12°C. or lower for at least two weeks without changes in spectral characteristics. At room temperature a rapid change begins after about two days. Re-esterification is suggested as one possible cause of differences in acid and saponification values encountered in connection with tall oil fatty acids. Storage of pinewood reduces the fatty and resin acid contents to a large extent. Autoxidation results in the conjugation of pinewood fatty acids. Heating at 180° liberates small amounts of highly conjugated fatty acids

from the petroleum ether-insoluble material of pinewood. One sample of pinewood fatty acids was investigated in regard to the geometrical configuration of its linoleic acid; the result suggests that it is of the normal *cis-cis* configuration. The conjugating effect of sulfate cooking conditions was also studied. The experimental cooks were found to alter approximately 38% of the linoleic and over 50% of the linolenic acids present. Methods for revealing possible contamination of fatty acids by other pinewood or tall oil constituents are discussed. The presence of linolenic acid in tall oil is discussed in the light of present investigations; the amount of natural linolenic acid in Finnish tall oil is either very low or nil. The iodine-value determination methods of Wijs and Klee-Benham were compared in connection with tall oil fatty acids; the latter is recommended. Comparative analyses of pinewood and tall oil fatty acids were carried out. A method of calculating the composition of tall oil is suggested. Palmitic acid is considered to be a secondary product in normal tall oil. No references are given in this abridgment. E.S.

KARABINOS, J. V., and BALLUN, A. T. Tall oil studies. II. Decolorization of polyethenoxy tallates with ozone and hydrogen peroxide. J. Am. Oil Chemists' Soc. 31, no. 2: 71-4 (February, 1954); *cf.* B.I.P.C. 23: 921.

A method for decolorizing tall oil-ethylene oxide condensates (polyethenoxy tallates) by the use of ozone or hydrogen peroxide is presented. The chemistry of the possible reactions involving quinoid structures is discussed. 2 tables, 3 figures, and 4 references. E.S.

TALL OIL ASSOCIATION. Tall oil for resins. Part I. Tall Oil in Ind. Bull. no. 13: 4 p. (January, 1954); *cf.* B.I.P.C. 23: 921.

The possibilities for tall oil in resins have multiplied at an unprecedented rate during the past five years. Since tall oil molecules do not have enough active spots for polymerization to the desired degree, tall oil must first be combined with other materials, thereby constructing molecules of greater functionality. Trans-esterification, blown tall oil, limed tall oil, esterified tall oil (glycerol, pentaerythritol, sorbitol, and other esters) are forms of greater functionality; their applications are outlined briefly. 73 references. E.S.

VENTILATION

ANON. Trapping, exhausting excess anti-offset spray. Boxboard Containers 72, no. 734: 20-1 (February, 1954).

Excess antioffset spray at the Warner Brothers Co., Bridgeport, Conn. is trapped by air suction (provided by cyclone-type blowers) and carried up through exhaust hoods which are installed about three feet over the delivery ends of the printing presses. The hoods lead to a main duct where vaporized water dissolves the offset spray; paper dust is also removed and washed along to sewer pipes. 5 figures. R.A.S.

WAGES

WALKER, JAMES F. Wages in converted paper products in April 1953. Monthly Labor Rev. 76, no. 12: 1314-17 (December, 1953).

According to a survey by the Bureau of Labor Statistics, straight-time hourly earnings for production workers engaged in the manufacture of paper products from purchased paper averaged $1.38 in April, 1953 (men averaged $1.51 and women, $1.16). Product differentials, regional and plant-size differences, and minimum rates are discussed. 2 tables. E.S.

WASTE LIQUOR

KIN, ZYGMUNT. Ion exchangers from waste liquors. Przeglad Papierniczy 9, no. 4: 113-16 (April, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 16: 8367 (Aug. 25, 1953). 3 tables, 1 diagram, and 7 references. E.S.

WET STRENGTH

ANON. Wet strength: fast pace. Chem. Week 74, no. 8: 46, 48, 50 (Feb. 20, 1954).

The historical development of wet-strength resins, applications to paper and board, and the competition between urea and melamine resins and their respective advantages and disadvantages are described; the names of the principal manufacturers of such resins are listed. 3 illustrations. E.S.

MYSLINSKA, Z., and PALENIK, K. Use of urea-formaldehyde resins in the manufacture of wet-strength papers. Przeglad Papierniczy 9, no. 4: 127-8 (April, 1953). [In Polish]

For abstract *cf.* C.A. 47, no. 16: 8367 (Aug. 25, 1953). 1 table. E.S.

SÖNNERSKOG, SVEN. A modified cationic urea resin for wet-strength papermaking. Tappi 37, no. 2: 79-80 (February, 1954).

Dicyandiamidine formate reacts with an acid solution of urea-formaldehyde (methylolurea) in water, giving a strongly hydrophilic resin in which the polymer ion shows a cationic charge. At higher degrees of condensation the resin can be used for making wet-strength paper. Some data on its efficiency on bleached and unbleached pulps are given. 4 tables and 2 references. E.S.

WOOD—EXTRACTIVES

ROFF, J. W., and ATKINSON, J. M. Toxicity tests of a water-soluble phenolic fraction (thujaplicin-free) of western red cedar. Can. J. Botany 32, no. 1: 308-9 (January, 1954).

In a study of the extractives of western red cedar heartwood, the thujaplicins were carefully removed from the water-soluble, nonvolatile, polyphenolic fraction which represented between 4 and 5% of the ovendry weight. Tests were made using a series of Petri plates containing the cedar extract at concentrations of 0.5, 1, 2, 4, and 8% in malt agar. The test fungus used was *Poria monticola* Murr. After eight days at 80°F. fungal growth occurred at the 0.5 and 1 concentrations, whereas the remaining concentrations were completely inhibitory. It is concluded that the thujaplicins are not solely responsible for the toxicity of the aqueous extracts, nor for the durability of western red cedar heartwood. 3 references. R.A.S.

WOOD—SACCHARIFICATION

ANON. Wood challenges corn as dextrose source. Chem. Eng. 61, no. 2: 138, 140, 142 (February, 1954).

A brief outline of the revamped Rheinau process (I) is given which uses a three-stage hydrolysis with hydrochloric acid to make dextrose from chipped wood waste (no sawdust can be included); (I) bears only superficial resemblance to the original process which consisted of a single-hydrolysis step followed by crystallization. Several important economies

have been effected since 1948, according to Karl Schoenemann, leader of the research. The lignin (30 lb./100 lb. of dry wood) obtained in (I) can be used in the production of phenol-formaldehyde resins, which is not possible with lignin produced in high-temperature processes. A comparison of the production costs of wood and corn dextrose is included, which indicates that the former can compete successfully with the latter. Dextrose is not only preferred over cane and beet sugars in many canning operations, but is also a valuable chemical raw material, particularly in the production of sorbitol and gluconic acid; these markets should mean a more stable price structure. 1 table, 1 flowsheet, 1 diagram, and 2 references. E.S.

WOOD OPERATIONS

ANON. Logging—paper mill coordination speeded. Paper Mill News 77, no. 7: 22-4 (Feb. 13, 1954); *cf.* B.I.P.C. 24: 222.

The co-ordination essential for keeping a continuous and steady movement of pulpwood from the forest to the mills of the Great Northern Paper Co., Bangor, Maine is effected by an FM two-way radio system. By equipping towboats, isolated logging camps, and maintenance and supply shops, operations are speeded, down time is cut, and fire reporting facilitated. 2 illustrations. R.A.S.

WOOD TRANSPORTATION

TIDEWATER EQUIPMENT COMPANY, *Brunswick, Ga.* Crane with cradles speeds pulpwood operation. Paper Ind. 35, no. 11: 1222 (February, 1954).

The "Dixie Logger" consists of six demountable reinforced steel-pipe cradles, two skids for sliding the cradles on and off the truck, and a winch to pull the cradles onto the truck. The truck carries two cradles, leaving the remaining four empty cradles in the woods where they are being loaded at ground level. When the truck returns, it leaves two empty cradles and picks up two loaded ones, transporting them to the rail siding, where a crane equipped with special slings transfers the pulpwood to a rack car. 3 illustrations. E.S.

VELØY, ODD. The construction and use of the "flow former." Norsk Skogind. 8, no. 1: 26-8 (January, 1954). [In Norwegian; English summary] *cf.* B.I.P.C. 20: 676.

The "flow former" (I) is a machine used to direct the flow of water in certain directions for various purposes during the floating of wood. (I) is mounted on a float and consists of an electromotor installed in a watertight chest which is sunk into the water and drives a propeller shaft. The shaft, assisted by suitably positioned blades, causes the water to flow in a straightforward motion. (I) is applied during the floating of timber in rivers and for feeding the timber toward the intake or in lakes during unfavorable wind conditions; for melting and removing ice; and sometimes for dredging, especially in cases where waste has dammed up the sewers of pulp and paper mills. 3 figures. E.S.

X-RAY RESEARCH

SEN, M. K., and ROY, S. C. Structures of native and mercerized celluloses. Nature 173, no. 4398: 298-300 (Feb. 13, 1954).

This is a preliminary note on the origin and implications of a newly reported equatorial reflection in the x-ray diffraction pattern of various native and mercerized celluloses. The intensity decreases with decreasing moisture

content and has therefore not been observed in previous studies on dry cellulose. Some of the points raised, a detailed discussion of which will be published elsewhere, are mentioned below. First, the crystal lattices previously proposed for the unit cells of cellulose (Meyer and Mark, Sauter, and Andress) do not represent the material at ordinary temperatures and humidities, although they may be valid for dry fibers. Second, the crystal lattice of native cellulose is not impenetrable to water. Finally, the current concept of fine structure may require revision. 4 tables, 6 figures, and 5 references. K.W.,Jr.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents are abstracted from the complete specifications.

AIR FILTERS

ASPLUND, ARNE J. A. Fibrous filter sheet for gases. U. S. patent 2,664,964. Filed July 16, 1947. Issued Jan. 5, 1954. 3 claims. [Cl. 183-44]

A porous filter sheet for removal of dust particles and the like from air or other gases is made from mechanically defibered pulp (e.g., Asplund fiber) and dried by passage of warm air through the sheet. Additional bonding in the sheet is obtained by impregnation with a binder such as sodium silicate or cellulose acetate. 3 figures. W.B.W.

ALKALINE PROCESSES

SLOMAN, ARTHUR R. Two-stage pulping process. Canadian patent 498,973. Filed June 12, 1948. Issued Jan. 5, 1954. 1 claim. Assigned to Associated Pulp and Paper Mills Limited.

Black liquor is used as the pulping agent in the first stage and white liquor in the second stage of the cook claimed. A savings of 2% caustic is reported in the pulping of eucalyptus wood. This is the same as U. S. patent 2,639,987 (May 26, 1953); *cf.* B.I.P.C. 23: 837-8. 3 figures. W.B.W.

BARKERS AND BARKING

BUSCH, THOMAS N. Bark-removing drum combined with hydraulic jet. U. S. patent 2,665,721. Filed Sept. 26, 1952. Issued Jan. 12, 1954. 7 claims. [Cl. 144-208]

A series of barking drums positioned end-to-end may be rotated independently of each other with respect to speed or direction. In the narrow space between drums, hydraulic nozzles are positioned to aid in the removal of bark or dirt from the logs. An adjustable gate at the outlet end governs the depth of logs in the drums. 5 figures. W.B.W.

PAULEY, ROBERT D., and MCCANNA, LOUIS A. Apparatus for removing bark from logs. U. S. reissue patent 23,765. Filed May

11, 1953. Issued Jan. 5, 1954. 19 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 144-208]

The barker embodies a bluntly rounded tool adapted to ride over bark irregularities while compressive force is applied to the cambial layer. This is a reissue of U. S. patent 2,576,967 (Dec. 4, 1951); *cf.* B.I.P.C. *22*: 367. 10 figures. W.B.W.

PAULEY, ROBERT D., and MCCANNA, LOUIS A. Method of barking logs. U. S. reissue patent 23,776. Filed May 11, 1953. Issued Jan. 26, 1954. 15 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 144-309]

A blunt tool of relatively small surface area is forced against the log to be barked while the log is rotated. Compression in the cambium layer causes the bark to separate from the wood leaving a clean log. This is a reissue of U. S. patent 2,576,966 (Dec. 4, 1951); *cf.* B.I.P.C. *22*: 367. 8 figures. W.B.W.

SHAW, ERNEST C. Hydraulic log barking apparatus. Canadian patent 499,294. Filed Oct. 31, 1951. Issued Jan. 19, 1954. 17 claims. Assigned to Allis-Chalmers Manufacturing Company.

A hydraulic barker is described in which the amplitude of an oscillating hydraulic jet may be adjusted, while the machine is in operation, to reduce the overthrow of water beyond the edge or over the top of logs of varying diameter. This is identical with U. S. patent 2,586,727 (Feb. 19, 1952); *cf.* B.I.P.C. *22*: 624. 4 figures. W.B.W.

SIMONS, HOWARD A. Hydraulic log-barker having log-holddown rollers and confronting rotary spray heads. U. S. patent 2,664,929. Filed March 17, 1953. Issued Jan. 5, 1954. 17 claims. [Cl. 144-208]

Logs carried through the barker are held on the supporting conveyors against the force of the upper and lower rotating jets by hold-down rollers. The barker is claimed to be especially effective for small logs. 6 figures. W.B.W.

BOARD—SHEET FORMATION

HESSE, JACK E. Method for manufacture of fiber-cement sheet laminates. U. S. patent 2,667,107. Filed Aug. 2, 1950. Issued Jan. 26, 1954. 7 claims. Assigned to Johns-Manville Corporation. [Cl. 92-38]

Continuously oversupplying the forming vat with the asbestos-cement slurry along the entire width of the vat and recirculating the overflow with the fresh stock diluted with white water is claimed to produce a sheet of uniform thickness. Such sheets normally range from 15 to 25% fibers and from 75 to 85% Portland cement. 2 figures. W.B.W.

BOARD SPECIALTIES

CLEMENTS, EDWARD S. Carrying cases for letters and other sheets of material. Canadian patent 499,447. Filed March 7, 1951. Issued Jan. 26, 1954. 7 claims.

An expandable, bellows-like carrying case made from cardboard, plastic, or the like is claimed. Each compartment is formed from a folded section with tucked-in end walls, and the compartments are joined together by binding strips. 2 figures. W.B.W.

FARRELL, ROBERT A. Interfitting lock. U. S. patent 2,666,567. Filed April 10, 1950. Issued Jan. 19, 1954. 3 claims. Assigned to Marathon Corporation. [Cl. 229-45]

An interfitting lock for paperboard cartons is easily and accurately locked by machine with the inclusion of a hinge in the slitted receiving flap which facilitates the insertion of the tongue from the opposite flap. 7 figures. R.A.S.

FEIGELMAN, HERMAN A. Combined display card and articles thereon. U. S. patent 2,665,003. Filed Jan. 25, 1951. Issued Jan. 5, 1954. 1 claim. [Cl. 206-79]

Objects (e.g., erasers) held thereon form part of the design of a counter display card made from stiff cardboard properly shaped and printed. 4 figures. R.A.S.

FORRER, HOMER W. Carrying device for bottle carriers. U. S. patent 2,665,838. Filed May 15, 1950. Issued Jan. 12, 1954. 3 claims. Assigned to Atlanta Paper Company. [Cl. 229-52]

A metal carrying device for use with bottle carriers of the type described in U. S. patent 2,646,918 (July 28, 1953; *cf.* B.I.P.C. 24: 66) comprises a bar member which slides inside and a handle with hook-shaped end portions which grips the outside of the plies of the handles of two carriers in end-to-end relation. 5 figures. R.A.S.

GEORGE, WALTER C. Partitioned folded-blank bottle carrier. U. S. patent 2,665,049. Filed Sept. 23, 1949. Issued Jan. 5, 1954. 2 claims. Assigned to Gaylord Container Corporation. [Cl. 229-28]

An easily assembled paperboard bottle carrier comprises three blanks; the medial partition contains a handle opening and extends above the top of the bottles. 5 figures. R.A.S.

LEVESQUE, ANDRÉ A. Memo pads and writing pads obtained from cardboard boxes. Canadian patent 499,114. Filed Aug. 23, 1952. Issued Jan. 12, 1954. 2 claims. [In French]

A combination of a cigarette, etc. box (consisting of an inner section and a tubular sleeve) and a memo pad is claimed. When the contents of the box have been used, the individual parts of the two box sections can be reassembled to form a writing pad. 6 figures. E.S.

MULNIX, ERSEL C. Carton. U. S. patent 2,666,566. Filed Oct. 14, 1948. Issued Jan. 19, 1954. 4 claims. [Cl. 229-39]

A collapsible sturdy bottle carrier comprises a reinforced three-ply bottom structure; a wire handle attached to the side walls extends through the cover flaps. 10 figures. R.A.S.

RENDALL, WARREN C. Produce tray. U. S. patent 2,665,836. Filed Jan. 10, 1951. Issued Jan. 12, 1954. 2 claims. Assigned to Gaylord Container Corporation. [Cl. 229-32]

An open-top tray which will provide proper ventilation for fresh fruits and vegetables is made from solid or corrugated fiberboard (or similar material) and comprises end walls with reinforced stacking flanges which extend above the side walls. 3 figures. R.A.S.

TILLERY, HUBERT B. Garment hanger guard. U. S. patent 2,665,829. Filed March 31, 1953. Issued Jan. 12, 1954. 4 claims. Assigned to Tillery Container Company. [Cl. 223-98]

A cardboard or plastic guard for a wire garment hanger has two arc-shaped creases spaced to form a shoulder with flaps to hold it securely in place and shape. 5 figures. R.A.S.

TOMARIN, HARRY A. Combination shirt wrapper and collar support. U. S. patent 2,665,051. Filed April 4, 1950. Issued Jan. 5, 1954. 1 claim. Assigned to Loroco Industries Incorporated. [Cl. 229-87]

A combination shirt wrapper and collar support fabricated from a continuous sheet of material such as cardboard serves as shirt board, collar support, and wrapper. 10 figures. R.A.S.

TUFTS, WILLIAM F. Slip resistant pants guard for coat hangers. Canadian patent 499,189. Filed Feb. 29, 1952. Issued Jan. 12, 1954. 1 claim. Assigned to L. M. Leathers' Sons.

This is the same as U. S. patent 2,653,740 (Sept. 29, 1953); *cf.* B.I.P.C. 24: 237. 7 figures. R.A.S.

BROKE

HYMAN, HOWARD D., and ROOT, EDWARD M. Paper machinery. U. S. patent 2,667,106. Filed Sept. 13, 1951. Issued Jan. 26, 1954. 8 claims. Assigned to The Black-Clawson Company. [Cl. 92-20]

Broke from a machine producing heavy kraft paper or board is fed to a pulper situated below the machine. Nozzles connected to a high-pressure water system are located above the pulper to cut the sheet into narrow strips so that it can be assimilated more easily by the pulper. 4 figures. W.B.W.

DISPENSING CONTAINERS

WILLIS, CECIL H., and WILLIAMS, RONALD. Dispensing cartons. Canadian patent 499,187. Filed Sept. 10, 1951. Issued Jan. 12, 1954. 9 claims. Assigned to Kalamazoo Vegetable Parchment Company.

A false bottom is provided in a carton for dispensing tissue or other sheet material to raise the remaining contents of the carton to a more accessible position. This is the same as U. S. patent 2,636,599 (April 28, 1953); *cf.* B.I.P.C. 23: 766. 11 figures. R.A.S.

DYES AND DYEING

BRUNNER, ERNST, and HINDES, FREDERIC W. Optical bleaching agents containing two 1:2:3-triazole rings. U. S. patent 2,666,062. Filed Jan. 11, 1952. Issued Jan. 12, 1954. 12 claims. Assigned to The Clayton Aniline Company Ltd. [Cl. 260-308] Canadian patent 499,494. Filed Jan. 11, 1952. Issued Jan. 26, 1954. 12 claims. Assigned to The Clayton Aniline Company Ltd.

The optical brightening agents claimed fluoresce a light blue or violet under ultraviolet light and are in general derived from aryl amines, naphthalene derivatives containing sulfonic acid groups (such as 2-aminonaph-

thalene-3,6-disulfonic acid) being of especial importance. The products in aqueous solutions may be added to the pulp before the sheet is formed or may be used as a soaking solution for textiles after washing. W.B.W.

FLOTATION

BROWN, EARL H. Concentration of oxidized iron ores by froth flotation in the presence of carbohydrate xanthates. Canadian patent 499,305. Filed Sept. 6, 1952. Issued Jan. 19, 1954. 5 claims. Assigned to Attapulgus Minerals & Chemicals Corporation; *cf.* B.I.P.C. 24: 598.

Finely divided taconite ore in aqueous suspension is conditioned with a xanthate such as sodium cellulose xanthate and a cationic amine (e.g., tetradecyl amine acetate); the conditioned ore suspension is subjected to froth flotation treatment wherein pine oil may be used as the frothing agent. W.B.W.

FOLDING BOXES

BERGSTEIN, ROBERT M. Lined box structure. U. S. patent 2,665,835. Filed Nov. 27, 1948. Issued Jan. 12, 1954. 4 claims. [Cl. 229-14]

A window carton is constructed from the minimum rectangular area of a sheet of paperboard fully lined with cellophane or like materials by cutting and scoring the structure in such a manner that the top main panel is in the center, the four sides are folded downward, and the corner triangles form the bottom which is closed by means of notches. 10 figures. R.A.S.

GALBRAITH, MARTIN J. Grease and moistureproof carton and container. U. S. patent 2,665,833. Filed April 15, 1949. Issued Jan. 12, 1954. 4 claims. Assigned to Sutherland Paper Company. [Cl. 229-3.1]

A grease- and moistureproof carton is formed from lined paperboard impregnated with hydrogenated peanut oil; the liner is treated with titanium dioxide. 4 figures. R.A.S.

GUYER, REYNOLDS. Carton. U. S. patent 2,665,837. Filed May 19, 1948. Issued Jan. 12, 1954. 3 claims. Assigned to Waldorf Paper Products Company. [Cl. 229-37]

A siftproof carton for granular or powdered material is claimed; the outer closing flaps are notched inwardly to engage the beads of the inner flaps, thus producing a tight closure. 4 figures. R.A.S.

INMAN, WILLIAM H., and HOLMES, RAYNOR M. Collapsible carton. Canadian patent 499,143. Filed July 21, 1951. Issued Jan. 12, 1954. 8 claims. Assigned to Bloomer Bros. Company.

This is identical with U. S. patent 2,655,304 (Oct. 13, 1953); *cf.* B.I.P.C. 24: 329. 11 figures. R.A.S.

MCREARY, RONALD. Handled carton for bakery products and the like. U. S. patent 2,667,297. Filed April 3, 1950. Issued Jan. 26, 1954. 2 claims. [Cl. 229-44]

A strip of paperboard suitably secured to the rear wall and the front cover flap provides a carrying handle for a carton for bakery goods. The

carton is locked by flaps from the bottom section which engage the cover section adjacent to the end of the handle. 8 figures. R.A.S.

INTERIOR PACKING

KATZMAN, ABE. Partitions for boxes, cartons, and the like. U. S. patent 2,665,026. Filed Nov. 30, 1949. Issued Jan. 5, 1954. 3 claims. [Cl. 217-22]

A partition structure for containers consists of an arrangement of strips of corrugated board or the like forming two layers, each having wide sections and narrow sections opposing each other with separators between. Long-necked bottles are packed with considerable space savings. 2 figures. R.A.S.

KOESTER, MELVIN C. Shipping container for glass sheets. U. S. patent 2,665,804. Filed Dec. 7, 1951. Issued Jan. 12, 1954. 8 claims. Assigned to Libbey-Owens-Ford Glass Company. [Cl. 206-62]

A shipping container for curved sheets of glass or other frangible material is constructed from double-face cardboard, fiberboard, paperboard, etc. and provided with two like end cushioning inserts and a central partition or partitions for holding the glass out of contact with the container. 8 figures. R.A.S.

MACHINERY—BOARD MACHINES

DAHL, ESSE. Machines for manufacturing boards from straw or like material. Canadian patent 499,188. Filed May 7, 1946. Issued Jan. 12, 1954. 1 claim. Assigned to Kommanditbolaget Halmplattor, Nils Ryberg & Co.

A machine for making a continuous strip of insulating board with unprocessed straw (or other long-fibered vegetable material) as the filler and face sheets of paper, cardboard, or fabric is claimed. The straw is fed from a hopper and compressed between the forming platens by a reciprocating plunger. 3 figures. W.B.W.

MACHINERY—BREAST ROLL

NIKS, NICHOLAS J. Apparatus for manufacture of paper. U. S. patent 2,665,615. Filed Jan. 12, 1949. Issued Jan. 12, 1954. 3 claims. [Cl. 92-44]

A headbox for a Fourdrinier machine is located around the outer end of the breast roll and terminates in a slice where the Fourdrinier wire leaves the breast roll. Several adjustments for control of sheet formation on the wire are claimed. This is a continuation in part of U. S. patent 2,473,069 (June 14, 1949); *cf.* B.I.P.C. 19: 823. 10 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

DUNLAP, CHARLES K. Means for sizing and surface finishing paper tubes and the like. U. S. patent 2,664,793. Filed March 21, 1950. Issued Jan. 5, 1954. 12 claims. Assigned to Sonoco Products Company. [Cl. 93-83]

Items such as textile yarn carriers, formed from tubular paper bodies are impregnated with a thermosetting resin, turned down to the proper

diameter, and cured in a heated curing die. The method and apparatus are covered in this patent. 6 figures. W.B.W.

MONKS, FRANK E. Band forming machine and process. U. S. patent 2,667,108. Filed Oct. 8, 1948. Issued Jan. 26, 1954. 16 claims. Assigned to Fuller Label & Box Company. [Cl. 93-79]

Label blanks of sheet material (for neckbands of bottles and similar applications) are picked up from the bottom of the pile by a two-piece suction foot which then separates to force the label to form around the frustoconical portion of the suction foot. The band is heat sealed while still around the mandrel, then removed and delivered by air pressure to the stack of finished bands. 20 figures. W.B.W.

WEISS, ARTHUR J. Apparatus for setting up folding cartons and the like. Canadian patent 499,008. Filed March 1, 1950. Issued Jan. 5, 1954. 4 claims. Assigned to Gair Company Canada Limited.

A cradle to assist in the manual setting up of a "simplex" type carton is claimed. This is identical with U. S. patent 2,625,084 (Jan. 13, 1953); *cf.* B.I.P.C. 23: 456. 6 figures. W.B.W.

WILLIAMSON, OSCAR H. Box holding clamp. U. S. patent 2,655,962. Filed June 1, 1951. Issued Oct. 20, 1953. 1 claim. Assigned to International Paper Company. [Cl. 144-297]

This clamp for assembling skirted box covers embodies radial arms, the two adjacent arms of which are adjustable by means of a handle attached to the intersection of the arms. The device serves as an aid to an operator in setting up and applying stitching or other fastening. 4 figures. W.B.W.

WITTKUHNS, BRUNO A., NUTTING, HARRY G. D., and HILL, GILBERT F. Machine for making paper containers. Canadian patent 499,552. Filed March 27, 1950. Issued Jan. 26, 1954. 32 claims. Assigned to National Paper Bottle Co. Inc.

This machine is similar to that described under Canadian patent 499,553 (Jan. 26, 1954; *cf.* abstract below) and is the same as U. S. patent 2,642,785 (June 23, 1953); *cf.* B.I.P.C. 23: 938. 32 figures. W.B.W.

WITTKUHNS, BRUNO A., NUTTING, HARRY G. D., and HILL, GILBERT F. Machine for making paper containers. Canadian patent 499,553. Filed March 27, 1950. Issued Jan. 26, 1954. 33 claims. Assigned to National Paper Bottle Co. Inc.

A machine for forming a paper milk bottle with a cylindrical body and a truncated conical top section is claimed. This is the same as U. S. patent 2,642,784 (June 23, 1953); *cf.* B.I.P.C. 23: 938. 58 figures. W.B.W.

WOOD, WAYNE A. Carton closing machine. U. S. patent 2,665,532. Filed Sept. 14, 1950. Issued Jan. 12, 1954. 7 claims. Assigned to Sutherland Paper Company. [Cl. 53-147]

Cartons with a hinged cover flap of the type used for bakery goods are closed by this machine after the contents have been placed into the carton. 5 figures. W.B.W.

MACHINERY—COUNTERS

LAUFFER, JACOB R. Automatic counting and tabbing machine for presses. U. S. patent 2,666,372. Filed May 2, 1950. Issued Jan. 19, 1954. 9 claims. Assigned to Hills-McCanna Company. [Cl. 93-93]

The counting device in this mechanism is actuated by the operation of the printing press (or other sheet-handling machine), and the tab feeder inserts a piece of paperboard cut from a supply roll after each unit of 50, 100, or 500 sheets delivered to the stack. The tabbing unit is portable and may be moved from place to place as required and the appropriate electrical connection made with the printing press. 17 figures. W.B.W.

MACHINERY—DOCTORS

COOK, ERNEST P. Multilength continuous doctor blade. U. S. patent 2,664,792. Filed Sept. 27, 1949. Issued Jan. 5, 1954. 6 claims. Assigned to Brown Company. [Cl. 92-74]

The drum-contacting edge of this doctor is made from a coilable strip of metal which is carried between a pair of reels, mounted at either end of the drier drum; these reels become alternately feed and takeup reels. A blade holder provides the necessary rigidity and forces the flexible blade into contact with the drum surface. The creping edge of the blade is maintained at the desired shape by grinding wheels which true the edge while the blade is in motion. 12 figures. W.B.W.

MACHINERY—GUIDE ROLLS

ROBINETTE, WILLARD C. Paper web guide. U. S. patent 2,666,598. Filed May 5, 1950. Issued Jan. 19, 1954. 13 claims. [Cl. 242-76]

A web-alignment device for paper, cloth, etc. embodies a tiltable laterally displaceable idler roll actuated by a sensor element at the edge of the web which operates through a servomechanism to control the guide roll. Shifting of the heavy feed roll for alignment of the web is eliminated. 5 figures. W.B.W.

MACHINERY—IMPREGNATING MACHINE

MUNTERS, CARL G. Apparatus for impregnating heat insulating material. Canadian patent 499,118. Filed April 26, 1948. Issued Jan. 12, 1954. 13 claims.

Insulating panels made up from numerous layers of alternate corrugated and interliner sheets are impregnated by dipping in asphalt or other saturating material; the panels are held in a basket during the dipping process. The bottom of the basket is so constructed that excess impregnant may easily drain from the channels of the board after the basket is removed from the tank. 5 figures. W.B.W.

MACHINERY—JORDANS

STAEGE, STEPHEN A., and PEARSON, JOHN H. Paper machinery. U. S. patent 2,666,368. Filed Oct. 14, 1950. Issued Jan. 19, 1954. 19 claims. Assigned to The Black-Clawson Company. [Cl. 92-27]

A controlling device for plug-type refiners is claimed which, if desired, makes the operation of such refiners completely automatic. The motor unit moves the plug inward until the desired clearance or motor loading is

reached or, in the event of stoppage, backs the plug out of the shell. Changed conditions either in the stock fed to the refiner or in the operation of the paper machine activate the unit to make the necessary adjustments. 6 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

DEARBORN, ERNEST R. Wrapping machine for irregularly curved articles. U. S. patent 2,666,283. Filed Oct. 19, 1951. Issued Jan. 19, 1954. 14 claims. Assigned to Angier Corporation. [Cl. 53-104]

A ring-shaped rotary shuttle within a supporting frame carrying a supply roll of narrow wrapping tape follows the convolutions as it traverses the length of an object such as an automobile bumper. One edge of the tape is folded under as the wrapping head applies the helical covering to the article. 10 figures. W.B.W.

FEYRER, WILLIAM F. Packaging apparatus and method of packaging. U. S. patent 2,667,019. Filed Feb. 12, 1949. Issued Jan. 26, 1954. 33 claims. Assigned to Nathan L. Solomon. [Cl. 53-11]

Items to be packaged by mounting on cards are fed to platens on a conveyor, adhesive-coated tape is applied over the backing card and items, the tape pressed into contact with the card at selected points by elements in the platens, and the tape severed between elements before the finished package is ejected from the machine. 20 figures. W.B.W.

KERR, CHARLES E., and ELSHEIMER, ROSCOE. Apparatus for handling cartons. Canadian patent 499,519. Filed May 9, 1949. Issued Jan. 26, 1954. 17 claims. Assigned to Food Machinery and Chemical Corporation.

This is the same as U. S. patent 2,649,676 (Aug. 25, 1953); *cf.* B.I.P.C. 24: 159. 24 figures. W.B.W.

MACHINERY—PAPER MACHINE

NIKS, NICHOLAS J. Method of making soft papers adaptable to impregnation. U. S. patent 2,666,369. Filed May 29, 1952. Issued Jan. 19, 1954. 2 claims. [Cl. 92-38]

A Fourdrinier-type paper machine is claimed in which the water is first drained from the sheet by application of suction through the wire; the web then passes over a felt where drainage into the felt is by gravity and, finally, is subjected to infrared heating to evaporate the major portion of the water. Before the sheet is wound on the take-up roll, it passes over a pair of heated rolls to insure that all the moisture is removed. The paper so produced is claimed to be of an open porous structure, especially suitable for impregnation with various agents. 1 figure. W.B.W.

MACHINERY—PASTING MACHINE

SEARLE, ROBERT F. Paste applicator for paper bag sleeves. U. S. patent 2,665,661. Filed Aug. 18, 1950. Issued Jan. 12, 1954. 4 claims. Assigned to Arkell and Smiths. [Cl. 118-243]

Pressure on the foot treadle of this device forces a paste-applying roller to contact one edge of a sheet held in the rack and to apply the desired amount of paste in a uniform line. 3 figures. W.B.W.

MACHINERY—PRESSES

AHLBORN, CLARENCE E. Pulp press. U. S. patent 2,664,814. Filed Feb. 21, 1948. Issued Jan. 5, 1954. 11 claims. Assigned to Jackson & Church Company. [Cl. 100-117]

A perforated conical hub contains discontinuous conveyor vanes and rotates within a cylindrical perforated shell. Pulp introduced at the top of the press is forced downward by the inclined vanes, while the annular space between the hub and the shell becomes progressively smaller. An adjustable ring at the outlet section between the hub and the shell controls the degree of dewatering of the pressed pulp. 5 figures. W.B.W.

MACHINERY—PULP-INSULATING MACHINE

BACHUS, BENSON F. Fourdrinier type machine for applying pulp insulation to wires. U. S. patent 2,666,370. Filed Aug. 20, 1948. Issued Jan. 19, 1954. 8 claims. Assigned to Western Electric Company, Incorporated. [Cl. 92-44]

Wire to be insulated is carried parallel to the wire of a Fourdrinier-type machine and maintained in proper relative position by a grooved guide roll which also acts to control the amount of pulp suspension flowed onto the wire. After the fibrous mass surrounding the wires is sufficiently dewatered, streams of water are used to cut parallel ribbons from the pulp web, each ribbon containing a wire in the center. These ribbons are led off the end of the machine between press rolls for further treatment, and the waste pulp is doctored from the Fourdrinier wire for re-use. 4 figures. W.B.W.

MACHINERY—REFINERS

SHELTON, HARRY J., JR., and SMILEY, LLOYD D. Refining blender. U. S. patent 2,656,119. Filed Feb. 14, 1951. Issued Oct. 20, 1953. 4 claims. Assigned to Gruendler Crusher & Pulverizer Co. [Cl. 241-46]

A refiner of the hammer-mill type wherein the rotor operates through a portion of its arc in the fluid suspension incorporates a pair of screw conveyors to mix heavy materials that settle to the bottom of the chamber. An adjustable weir plate controls the depth of fluid in the rotor chamber. 3 figures. W.B.W.

MACHINERY—SAWS

FERRARI, ERNEST R. Machine for splitting or resawing insulating boards. U. S. patent 2,664,923. Filed Oct. 14, 1952. Issued Jan. 5, 1954. 3 claims. Assigned to American Smooth Saw Co. [Cl. 143-5]

Insulation board is split to form wedge-shaped pieces for simulated siding by sawing at a slight angle through the fibrous board. Simple modifications of a bandsaw are claimed to adapt it for this purpose. 12 figures. W.B.W.

MACHINERY—SHEET-FEEDING MECHANISM

RIBICH, THOMAS A. Air control mechanism for pneumatic sheet separators. U. S. patent 2,665,907. Filed Sept. 6, 1950. Issued Jan. 12, 1954. 3 claims. Assigned to Weldon Tool Company. [Cl. 271-57]

Sheets are removed from the top of a forwardly conveyed stack and fed one-by-one to a folder or other machine. An air blast against the forward edge of the stack raises the sheet, and the vacuum wheel above the stack feeds the sheet onto the conveyor. A sheet detector stops the operation of the device if two sheets are fed simultaneously. 6 figures.
W.B.W.

MACHINERY—SLITTERS AND WINDERS

CARTER, THOMAS N. Winding machine. Canadian patent 499,312. Filed Oct. 7, 1950. Issued Jan. 19, 1954. 5 claims. Assigned to Cameron Machine Company.

A winder for web material incorporates a winding roll which is driven by a surface winding drum and a top pressure roll. This is the same as U. S. patent 2,596,208 (May 13, 1952); *cf.* B.I.P.C. 22: 791. 9 figures.
W.B.W.

MACHINERY—SUCTION ROLLS

BEACHLER, EDWARD D. Suction press assembly. U. S. patent 2,666,371. Filed Sept. 27, 1950. Issued Jan. 19, 1954. 2 claims. Assigned to Beloit Iron Works. [Cl. 92-49]

The web is picked off the forming wire by a suction press roll with a co-operating felt, then transferred at succeeding suction press roll nips to a second and third carrying felt before transferal from the last felt to the Yankee drier drum. 1 figure. W.B.W.

MACHINERY—WEB-FEEDING MECHANISM

FROMMER, JOSEPH C. Web centerline control device. U. S. patent 2,666,639. Filed May 14, 1951. Issued Jan. 19, 1954. 5 claims. Assigned to Electric Eye Equipment Company. [Cl. 271-2.6]

The control circuit for a web alignment device employing a sensing element (air pressure, photo tube, or other) on either side of the web is claimed. Said sensing elements are interconnected mechanically in such fashion that both heads move toward or away from the center line simultaneously and equally and, if the web has shifted laterally, energize the proper circuits to return the web to alignment by the means employed. 5 figures. W.B.W.

MATERIALS HANDLING

PARKER, CLARENCE E. Sheet handling apparatus. U. S. patent 2,667,259. Filed Sept. 1, 1951. Issued Jan. 26, 1954. 2 claims. Assigned to The Coe Manufacturing Company. [Cl. 198-33]

A device is claimed, which turns a panel of plasterboard back upon the following panel so that the two boards proceed on the conveyor in a stacked relationship. The face sides of each pair of boards are thus protected during subsequent handling and shipment. 8 figures. W.B.W.

PACKAGING

AMATEL, HAROLD. Package of fragile articles. U. S. patent 2,667,267. Filed May 17, 1949. Issued Jan. 26, 1954. 1 claim. Assigned to Westinghouse Electric Corporation. [Cl. 206-65]

This is essentially the same as Canadian patent 496,197 (Sept. 15, 1953); *cf.* B.I.P.C. 24: 246. 7 figures. R.A.S.

CORNEY, HAROLD D. Wrapped tire. U. S. patent 2,665,001. Filed May 2, 1950. Issued Jan. 5, 1954. 1 claim. Assigned to United States Rubber Company. [Cl. 206-46]

A method of wrapping an automobile tire is claimed in which a paper strip previously folded and adhesively secured to form a flattened tube is wound around the tire to produce a continuous protective covering. 4 figures. W.B.W.

KAUFFMAN, JOHN H. Packaging and dispensing frozen beverage forming concentrates. U. S. patent 2,667,422. Filed July 9, 1952. Issued Jan. 26, 1954. 13 claims. [Cl. 99-171]

Concentrate such as used in citrus-juice drinks is introduced into paper cups, the concentrate frozen, and the cups nested to seal the contents during storage. Numerous modifications in cup design are claimed to provide a better stacking and sealing cup for this purpose. 5 figures. W.B.W.

PAGE, JOHN E. Container construction. Canadian patent 499,013. Filed Oct. 10, 1950. Issued Jan. 5, 1954. 9 claims. Assigned to Gibson Patent Containers, Ltd.

A collapsible cylindrical container for ice cream consists of a main paperboard body provided with expansion creases and metal rim-receiving grooves for top and bottom closure disks. 4 figures. R.A.S.

SIMPSON, HENRY A. Packaging, storing, and vending frozen concentrates and the like. U. S. patent 2,667,423. Filed Oct. 5, 1951. Issued Jan. 26, 1954. 14 claims. [Cl. 99-171]

This is very similar to U. S. patent 2,667,422 (Jan. 26, 1954; *cf.* abstract above), except that a layer of ice over the concentrate is claimed as the sealing means. 18 figures. W.B.W.

PACKAGING—OPENERS

ANGLADA, JOSEPH A. Reinforced package wrapper. U. S. patent 2,665,834. Filed Sept. 7, 1949. Issued Jan. 12, 1954. 4 claims. Assigned to American Viscose Corporation. [Cl. 229-7]

A regenerated cellulose film wrapper for paper napkins and the like is provided with transversely applied strips of the same material for reinforcement about the opening tear strip and at the bend lines. 3 figures. R.A.S.

PAPER SIZING

BAKALAR, ARTHUR B., and SULLIVAN, ROBERT D. Method of sizing paper. U. S. patent 2,665,983. Filed Aug. 2, 1948. Issued Jan. 12, 1954. 12 claims. Assigned to Shell Development Company. [Cl. 92-3]

Sizing agents for such materials as paper, cardboard, textiles, and the like made from water-in-oil emulsions are stabilized by the addition of a polyphosphoric acid compound, such as sodium trimetaphosphate or sodium pyrophosphate. The stabilized emulsion is added to the beaten pulp, then precipitated on the fiber by the addition of an acidic agent (e.g., alum). W.B.W.

BRADLEY, THEODORE F. Sizing of fibrous materials and compositions useful for sizing and for other purposes. U. S. patent 2,665,206. Filed June 15, 1948. Issued Jan. 5, 1954. 10 claims. Assigned to Shell Development Company. [Cl. 92-3]

Sizing agents for paper, cardboard, textiles, and the like are made from the lubricating-oil fractions of petroleum together with naphthenic acid salts which have an average acid number between 100 and 200. The sizing may be accomplished at any point during the beating or refining process and an acidic precipitant (e.g., alum, calcium chloride, sulfuric acid, etc.) is added to fix the sizing agent to the fiber. W.B.W.

MCMILLAN, FRANK M., and SULLIVAN, ROBERT D. Naphthenate sized products. U. S. patent 2,665,207. Filed June 29, 1948. Issued Jan. 5, 1954. 6 claims. Assigned to Shell Development Company. [Cl. 92-3]

A process for sizing kraft pulp involves treatment of the pulp in the beater with a naphthenate or naphthenic acid with an acid number greater than 200 and precipitation of the sizing agent on the fiber with papermakers' alum. This is the same as Canadian patent 472,849 (April 10, 1951); *cf.* B.I.P.C. 21: 671. W.B.W.

PAPER SPECIALTIES

DAVIS, AUSTIN E. Preparation of sheet material with remoistenable gum coating. U. S. patent 2,666,718. Filed May 25, 1950. Issued Jan. 19, 1954. 5 claims. Assigned to Nashua Corporation. [Cl. 117-122]

A porous gummed surface which is readily moistened and retains moisture longer than usual coatings is obtained by the evolution of carbon dioxide within the gum layer at the proper time during the drying cycle. The change from basic to acidic conditions within the layer is responsible for the evolution of the gas. W.B.W.

DOLL, MARTIN, and DOLL, BRENDAN L. Pad. U. S. patent 2,656,291. Filed April 2, 1951. Issued Oct. 20, 1953. 5 claims. Assigned to Spaugh Paper Company, Incorporated. [Cl. 154-54]

A resilient pad construction is claimed which embodies superimposed layers of flexible sheet material (e.g., paper, plastic, metal foil, rubber, or the like) scored with parallel rows of longitudinally spaced slits, the slits in adjacent rows being staggered. When tension is applied to materials treated in the above manner, diamond-shaped openings are formed. An outer covering of sheet material completes the pad. 3 figures. W.B.W.

KING, GLENGARRY D., and HARKEMA, RUSSELL V. Method of making masked lignocellulosic material. U. S. patent 2,666,726. Filed April 21, 1951. Issued Jan. 19, 1954. 1 claim. Assigned to Crown Zellerbach Corporation. [Cl. 154-106]

Surface defects of plywood sheets are covered with a resin-impregnated paper sheet, and the plywood with the attached masking sheet is passed between heated embossing rolls to impart a texture to the surface which will completely overshadow defects in the wood surface. A phenol-formaldehyde resin (e.g., Synco 721 or Amres 4971) is preferable for the overlay and is added to the beater in sufficient amounts so that approximately 20% of the final sheet weight is resin. 5 figures. W.B.W.

LOVEKIN, LOUISE G. Disposable diaper. U. S. patent 2,667,168. Filed Oct. 4, 1951. Issued Jan. 26, 1954. 3 claims. [Cl. 128-284]

In this disposable diaper a piece of cotton-gauze material forms the envelope and a creped cellulose-tissue layer the absorbent material. Tissue pads of various sizes are used to give the desired absorbency without bulkiness. 6 figures. W.B.W.

MCQUISTON, RAYMOND C., and DAVENPORT, FRANK E. Precipitating size with chromium and aluminum salts. U. S. patent 2,666,699. Filed Jan. 6, 1947. Issued Jan. 19, 1954. 4 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 92-21]

A method is claimed whereby fibers, either of vegetable, mineral, or animal origin, are conditioned by introducing small amounts of chromic sulfate and aluminum sulfate, and treated with natural or synthetic rubber latex, thermoplastic and thermosetting resins, etc., so that the fiber is coated with the binder particles before the fibers are formed into a web on papermaking machines. The resulting materials are suitable for shoe inner soles, floor coverings, backing for pressure-sensitive adhesive tapes, or gasket sheeting. W.B.W.

STERNFIELD, GEORGE L., and BLOCK, MYRON W. Disposable cleansing tissue. U. S. patent 2,665,528. Filed Jan. 27, 1950. Issued Jan. 12, 1954. 2 claims. [Cl. 51-185]

A re-usable disposable cleansing material comprises a wet-strength paper, cloth, or plastic base sheet impregnated with a suitable fungicide upon which is coated an adhesive material for retention of finely divided abrasive media and soap or detergent compounds. 6 figures. W.B.W.

SÜS, OSKAR. Light-sensitive diazo compounds and photoprint material prepared therefrom. U. S. patent 2,665,985. Filed Oct. 20, 1950. Issued Jan. 12, 1954. 15 claims. Assigned to Keuffel & Esser Company. [Cl. 95-6]

Excellent prints can be made with light-sensitive paper coatings, the light-sensitivity of which is due to the presence of diazo compounds of aminophenyltriazines. These can be prepared by boiling dialkoxyphenylbiguanides with organic acids to form triazines, then nitrifying the latter in glacial acetic acid. W.B.W.

ZIMMERMAN, JEROME G. Manifolding transfer and method of making. Canadian patent 499,066. Filed Dec. 29, 1948. Issued Jan. 5, 1954. 11 claims. Assigned to The Standard Register Company.

This is very similar to U. S. patent 2,653,110 (Sept. 22, 1953); *cf.* B.I.P.C. 24: 252. 2 figures. W.B.W.

PHYSICAL TESTING—MOISTURE

COLLINS, ERNEST H. Method and apparatus for measuring moisture content. U. S. patent 2,666,897. Filed June 28, 1948. Issued Jan. 19, 1954. 14 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 324-65]

A device especially suitable for measuring moisture content of wood veneer, plywood, molding compounds, and the like involves heating the ma-

terials to a point where electrical conductance of the material is affected by moisture content. A temperature of 300°F. raises the conductance to a measurable value for materials such as those listed above. The electrodes of the instrument (which contain heating elements) are held in contact with the material to be tested with a predetermined force. 12 figures. W.B.W.

PLASTICIZERS IN PAPER

LANG, LOUIS, and BAIRD, RONALD J. Plasticizer and moisture retentive composition for paper and paper containing it. U. S. patent 2,666,713. Filed Feb. 8, 1950. Issued Jan. 19, 1954. 16 claims. Assigned to The National Sugar Refining Company. [Cl. 106-162]

A plasticizer especially suitable for use with glassine to impart grease resistance and to make the paper sufficiently moisture retentive is claimed. The mixture, preferably in concentrated form (75% solids and 25% water), comprises a sugar, urea, and a glucoside or a cyclic acetal of a sugar of glucoside; the proportions may be adjusted to give the degree of moisture retention or grease resistance desired. W.B.W.

PLASTICS

BOEHM, ROBERT M., and DORLAND, RODGER M. Etherification of lignins and lignin-like material. Canadian patent 499,032. Filed Jan. 29, 1945. Issued Jan. 5, 1954. 22 claims. Assigned to Masonite Corporation.

A lignocellulose composition useful for molding compounds is prepared by selective etherification of the lignin and ligninlike compounds while still associated with the cellulosic materials. Hydrolyzed wood fiber (e.g., that produced in the Mason gun) is made alkaline and the lignin etherified with slow heating in the presence of an agent such as methyl chloride, ethyl iodide, diethyl sulfate, or the like. This molding composition is claimed to have improved stability, resistance to water absorption, and high alkali resistance. W.B.W.

PLASTICS—PAPER-BASE

GRANGAARD, DONALD H. Process for impregnating cellulosic sheet. U. S. patent 2,665,221. Filed July 7, 1950. Issued Jan. 5, 1954. 4 claims. Assigned to Paper Patents Company. [Cl. 117-60]

A paper web impregnated with a water-soluble phenol-aldehyde type resin under the controlled conditions outlined in this patent is claimed to exhibit improved bending strength and impact resistance. The process involves the control of available moisture, including that in the paper web and the impregnating agent, to 8-10% of the total moisture available to wet the cellulosic fibers. Sheets made from 100% kraft furnish exhibit the maximum improvement, whereas sheets containing mixtures of groundwood and one or more chemical pulps show a lesser improvement. 6 figures. W.B.W.

PRINTING AND PRINTER'S INK

RUSSELL, FRANK J., JR. Metal foil matrix. Canadian patent 498,956. Filed March 14, 1953. Issued Jan. 5, 1954. 10 claims.

A method of forming stereotype mats to be inserted in a typewriter is claimed, wherein the impression is made in a matrix composed of several layers of soft metal foil. A casting is made from the foil matrix with a cold

setting mineral or plastic composition, and the finished type plate is formed in the normal manner. 4 figures. W.B.W.

SETUP BOXES

JUNGMAYR, THEODOR. Method of manufacturing boxes. U. S. patent 2,665,616. Filed May 10, 1952. Issued Jan. 12, 1954. 1 claim. [Cl. 93-55.1]

A method of producing boxes from a casing and a closure blank of paper, cardboard, etc. is claimed, in which the closure blank is attached with a thermoplastic foil which folds over and seals the corners as the closure slides into the bottom section. 8 figures. R.A.S.

SHIPPING CONTAINERS

BAUMANN, MARTIN. Shipping container. U. S. patent 2,665,050. Filed June 1, 1950. Issued Jan. 5, 1954. 1 claim. Assigned to International Paper Company. [Cl. 229-33]

The side walls of a corrugated-board shipping container for bottled goods are reinforced by flaps extending from the end walls and fastened along the upper edge of the side walls by staples or similar means. These three-ply end walls, scored with hand holes, and two cover flaps are formed as an integral part of the one-piece blank. 4 figures. R.A.S.

BAUMANN, MARTIN, and SIDER, NICHOLAS M. Shipping package. U. S. patent 2,665,002. Filed June 1, 1950. Issued Jan. 5, 1954. 1 claim. Assigned to International Paper Company. [Cl. 206-46]

A shipping container for refrigerators or similar bulky cabinets comprises a paperboard body section which fits over the object and wooden cleats securing it to the base; it is provided with panel-locking flaps to which the top and bottom sections are attached. The bottom section fits over a mounting skid; metallic straps or wire hold the assembled container together. 4 figures. R.A.S.

BAXTER, JAMES C., and FRENCH, JOHN H. Shipping tube with integral end closure. Canadian patent 499,265. Filed March 3, 1951. Issued Jan. 19, 1954. 3 claims.

Extensions on both ends of a shipping tube of paperboard or other flexible material are cut into four tabs, each with two sets of oppositely curved notches and slots, providing a double interlocking closure. 6 figures. R.A.S.

BELSINGER, JACK R. Shipping container for heavy bulk merchandise. U. S. patent 2,665,047. Filed Nov. 8, 1950. Issued Jan. 5, 1954. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-14]

A corrugated or fiberboard shipping container for nails, rivets, and the like comprises a bottom and top outer sections which are identical and telescope over a third liner section until the outer surfaces are flush. A sealing band holds the construction in closed position; metal bands may be used. This is identical with Canadian patent 490,592 (Feb. 17, 1953); *cf.* B.I.P.C. 23: 612. 7 figures. R.A.S.

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. patent 2,665,048. Filed March 23, 1950. Issued Jan. 5, 1954. 2 claims. Assigned to Belsinger, Inc. [Cl. 229-27]

A fiberboard shipping container consists of four blanks suitably shaped and scored to form two equal cells with lining and reinforcement; it is especially adapted for packing eggs, fruit, and the like. 7 figures. R.A.S.

TALL OIL

BROWN, EARL H. Concentration of oxidized iron ores by froth flotation in the presence of carbohydrate xanthates. Canadian patent 499,304. Filed Sept. 6, 1952. Issued Jan. 19, 1954. 5 claims. Assigned to Attapulgus Minerals & Chemicals Corporation; *cf.* B.I.P.C. 24: 586.

A method of concentrating finely divided iron ores such as taconite by froth flotation involves the use of an anionic collecting agent. Caustic neutralization of tall oil fatty and resin acids (e.g., Liqro) with lime and the addition of sodium starch xanthate produces a collecting agent for the siliceous residue and leaves the iron ore concentrate. W.B.W.

WET STRENGTH

ILER, RALPH K. Processes for treating paper with silica and products produced. Canadian patent 499,328. Filed March 11, 1947. Issued Jan. 19, 1954. 2 claims. Assigned to E. I. du Pont de Nemours and Company.

Stabilized colloidal silica produced by passing sodium silicate solution through an acid-regenerated ion-exchange resin is applied to a paper either by coating rolls or by passing the sheet through the solution. This treatment is claimed to impart wet strength to the sheet, as well as scuff resistance, for papers such as bank-note paper. W.B.W.

WOOD—PLASTICIZATION

HERITAGE, CLARK C. Method of densifying wood. U. S. patent 2,666,463. Filed Feb. 21, 1949. Issued Jan. 19, 1954. 8 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 144-309]

Green wood (Douglas-fir is used in the examples) is treated between heated press platens with application of light pressure until the moisture content is reduced to about 15%. This heating period should be as rapid as feasible, whereupon the pressure in the press is raised to 1000-2000 p.s.i. and high-frequency induction heating is employed. After compression to a predetermined density, the panels are allowed to cool while still held under pressure. The lignin in the wood is plasticized but not degraded by this process and acts as the bonding agent to hold the compressed wood in its new form. 2 figures. W.B.W.

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